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The Scientific Working Group on Dog and Orthogonal Detector Guidelines (SWGDOG)

Abstract

The Scientific Working Group on Dog and Orthogonal detector Guidelines (SWGDOG) is a partnership of local, state, federal and international agencies including law enforcement and first responders. This project was undertaken as a response to concerns coming from a variety of sectors including law enforcement and homeland security regarding the need to improve the performance, reliability, and courtroom defensibility of detector dog teams and their optimized combination with electronic detection devices. This project was modeled after the successful precedent of a variety of other scientific working groups (SWG's), SWGDOG being the eleventh since 2005. Presently there are thirteen SWG's as of 2009 all challenged with developing internationally recognized consensus-based best practice guidelines developed by a membership of respected scientists, practitioners, and policy makers representing diverse backgrounds. SWGDOG general meetings have been held biannually for the past five years to produce the initial set of guidelines with NIJ funding the management of this project and the travel for international members. The DHS and FBI have funded the travel and meeting costs for the domestic SWGDOG members for the past four years.

The current success of SWGDOG is being manifest by a shift of several national canine organizations to adopt the approved best practice guidelines proposed. Though SWGDOG guidelines are not mandatory, this positive change is the ultimate goal of the working group. The continued approval and revision of SWGDOG documents has received an increased number of public responses and input which has shaped the documents making them publicly vetted.

Establishing consensus based best practices for the use of detection teams is expected to provide a variety of benefits to local law enforcement and homeland security. Benefits include improved interdiction efforts as well as courtroom acceptance by improving the consistency and performance of deployed teams and optimizing their combination with electronic detection devices. While it is not technically part of the scope of SWGDOG, a future accreditation program based on SWGDOG guidelines will be an important mechanism to facilitate the adoption of these SWGDOG guidelines.

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Executive Summary

The Scientific Working Group on Dog and Orthogonal detector Guidelines (SWGDOG) is a partnership of local, state, federal and international agencies including law enforcement and first responders. This project was undertaken in 2005 as a response to concerns coming from a variety of sectors including law enforcement and homeland security about the need to improve the performance, reliability, and courtroom defensibility of detector dog teams and their optimized combination with electronic detection devices. This project was modeled after the successful precedent of a variety of other scientific working groups and is developing internationally recognized consensus-based best practice guidelines developed by a membership of respected scientists, practitioners, and policy makers representing diverse backgrounds.

Establishing consensus based best practices for the use of detection teams provides a variety of benefits to local law enforcement and homeland security. Benefits include improved interdiction efforts as well as courtroom acceptance by improving the consistency and performance of deployed teams and optimizing their combination with electronic detection devices.

For nearly two decades, there have been scientific working groups (SWG's) established, initially sponsored exclusively by the FBI. The purpose of these working groups was to establish professional forums in which federal, state, and local government experts, together with academic and commercial scientists and other recognized experts in the selected field could develop optimal operational guidelines.

In recent years, it has become increasingly clear that local law enforcement as well as national homeland security can benefit from improvements in the performance of deployed detector dogs and their proper combination with electronic detection devices. A variety of leaders in the detection canine and instrument community support the establishment of a scientific working group in this area, and there has already been some standardization efforts in this area that can be drawn from.

Local, state, federal and international law enforcement agencies stand to benefit from improvements in the performance and overall reliability of detector dogs and their optimized combination with electronic detection devices.

SWGDOG benefits:
- → national security,
- → border protection,
- → drug and contraband interdiction,
- → law enforcement and criminal investigations,

→ disaster response

Establishing best practices for detection teams improves interdiction efforts as well as courtroom acceptance of dog alert evidence by improving the consistency and performance of deployed detector dogs.

Because the detection of contraband and other forensic evidence covers such a broad set of disciplines the scope of SWGDOG by necessity reflects this scope. It covers topics from standardization of terminology, to veterinary issues, training issues, legal aspects and the variety of subtypes of detector dogs..

The areas where documents have been developed are:

SC1 - Unification of Terminology: During the four year period of SWGDOG, there have been 334 terms defined. These terms will help the community understand the verbiage in the rest of the SWGDOG documents and provides for a common language between scientists, handlers, and administrators.

SC2 - General Guidelines: The general guidelines were written to provide recommended general guidelines for training, certification, and documentation pertaining to all canine disciplines. (Discipline specific guidelines are found within the corresponding subcommittee documents.) The document describes initial training of the canine, the handler and the team as a whole. Certification guidelines which describe the types of assessments to be used i.e. odor recognition, comprehensive assessment and double-blind are discussed as a starting point upon which each subsequent subcommittee may build their specific guidelines.

SC3 - Selection of Serviceable Dogs: In this document the aptitude and temperament of the canine is evaluated. This is done through several different areas including temperament, environmental soundness, search and retrieve, sociability and tracking.

SC4 - Kenneling, keeping, and healthcare: This document contains advice on managing the health, housing and husbandry of Detection Dogs. It is very important for all canine detection services to keep dogs in good health and mentally fit, both on and off of duty hours. It is necessary to have an optimal physical and mental condition in order to optimize the potential of these dogs.

SC5 - Selection & Training of Handlers & Instructors: This document facilitates the process of selecting qualified canine handlers and instructors. In addition, it outlines the essential curricula recommended for the training of both positions.

> *Handlers*: To ensure that all working canine handlers get the same basic education pertaining to canine handling. To ensure that there is continuity

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across agencies and organizations as to the content of the canine handler's curriculum.

Instructors: To outline the topics that should be covered as good practice in the training of new instructors. Also to ensure that there is continuity across agencies, organizations and departments regarding the content of the Canine Instructor's curriculum.

SC6 - Presentation of Evidence in court: These guidelines are not meant to be comprehensive procedures on how evidence is presented in a court of law. Rather, these guidelines provide an overview of issues to consider and a resource of relevant case law to assist the lawyer and the expert witness (i.e., handler, scientist) in the presentation of evidence in court. In addition, a comprehensive list of federal and state case law summaries is provided in Appendix 6.1 at www.swgdog.org.

SC7 - Research and Technology: The mission of the SWGDOG subcommittee on Research and Technology is to identify research and technological approaches, topics, and findings that are relevant to the detection canine and orthogonal detector (primarily instrumental detection) communities. This subcommittee is also charged with identifying areas in need of engagement by the scientific community and topics that should be the focus of the next generation of research efforts. The Research and Technology Subcommittee serves as a clearinghouse for the available scientific literature regarding detector dogs and orthogonal detectors making available a searchable database of up-to-date publications (Appendix 7.1 at www.swgdog.org contains the searchable database of published literature) and encouraging research in areas where gaps exist in the knowledge base or detection capabilities. In addition, this subcommittee utilizes the latest scientific information to make recommendations on best practices to other SWGDOG subcommittees. In the course of its work, this subcommittee identifies topics that need clarification and those that would benefit from a newer, more scientific approach. Research on various topics is expected to focus on facilitating all aspects of detection work and increasing cost-effectiveness of the relevant programs. Additionally, this subcommittee outlines key research concerns and, or project areas with the intent of establishing potential collaborative relationships between researchers and operational personnel, and identifying potential areas of funding.

SC8 - Accelerant Dogs: Provides best practice guidelines for training, certification and documentation pertaining to accelerant detector canines.

SC8 - Agriculture Dogs: Provides recommended guidelines for training, certifying and documenting the performance of agricultural substance detection canine teams.

SC8 - Explosives Dogs: Provides recommended guidelines for training, certification and documentation pertaining to explosives detector canines.

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SC8 - Human Remains Detection Dogs: Provides recommended best practice guidelines for training, certification and documentation pertaining to human remains (cadaver) detection canines on land and /or water.

SC8 - Narcotics Dogs: Provides recommended guidelines for training, certification and documentation pertaining to narcotics detector canines.

SC9 - Non-specific Human Scent Wilderness Area Searches: Non-specific human scent wilderness area searches are used to locate lost people and or fugitives in unpopulated wilderness areas through air scenting by a trained canine/handler team. The goal of this type of search is for the canine/handler team to utilize the wind, by way of air scenting, to search for and detect live people within a defined search area. This differs from other types of searches where the canine follows the target's foot track.

SC9 - Pre-scented Canine Searches: Pre-scented canine searches are ones in which the canine /handler team searches for and follows a specific person's odor trail over different surface types after the canine has been "scented" on an object containing the target's odor. The dog works from an article to either a person or a location associated with that person. The goal is for the canine to detect and follow the matching odor trail to the exclusion of all other odor trails which leads to a specific person and or location associated with that person and correctly demonstrate the absence of a matching odor trail. These canines are used for finding a specific person and/or location associated with that specific person after scenting the canine on an object containing the target's odor.

SC9 - Location Checks: Location checks are used to identify the presence or absence of the odor of a specific person to the exclusion of all other odors at a given location. In this discipline, the canine is used to odor match a "pre-scented" object or pad to the odors present at the check site. This technique may be used for subject exclusion or inclusion odor checks.

SC9 - Article Search: This canine discipline is used for searching areas, usually near crime scenes, for human-scented articles that were thrown away or left behind. Canine shall search an area and indicate all human-scented articles in that area.

SC9 - Disaster Search (Searching for Live People): Provides recommended guidelines for training, certification, and documentation pertaining to canines trained to search for live people in disaster environments, including structural collapse. The canine shall search for, detect and/or locate live people in debris resulting from catastrophic incidences, man-made or natural.

SC9 - Scent Identification Lineups: A canine examination of human scent traces in a comparative manner in order to confirm the presence or absence of a match between objects or scent samples.

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SC9 - Tracking/Trailing people based on last known position: This task is one in which the canine team searches for and follows a specific person's track/trail over different surface types after the canine has been started on the person's last known position. The primary goal is for the canine to detect and follow the track/trail to the exclusion of all other track/trails which leads to a specific person, location, and/or article associated with that person within their mission specific environment. A secondary goal of this task may be to locate articles left by this specific person along the track/trail.

The reliability of detector dog teams often comes into question in courts of law and in the mass media. This is due to limited peer reviewed research on error rates and a lack of common best practices for the certification and maintenance of detection teams. The available data demonstrates that detector dogs still represent one of the fastest, most versatile, reliable and cost effective real-time detection devices available. However, the unique operational complexities of the dog handler team and the limited amount of reliable scientific information makes the implementation of highly reliable and efficient detection teams less straightforward than with analytical instruments. The overall evaluation of detector dog teams includes behavioral factors such as type and duration of searches, alertness of the team, responsiveness of the dog to the handler and the handler's ability to interpret the dog's behavior. These efforts along with standardization of certification and maintenance training protocols will enhance performance of these teams, allow for objective comparisons and improve the courtroom defensibility of detector dog alert evidence.

The SWGDOG work product is publicly-vetted consensus-based best practice guidelines in each of the subject areas. One of the keys to the success of this process was creating subcommittees whose members are not only highly regarded in their field, but the subcommittee as a whole represents a diversity of i) expertise, ii) type of organizational affiliation (academic, private, and variety of public institutions), iii) type of job function (scientists, practitioners, policy makers, etc), and iv) geographical location (local, state, federal and international). The SWGDOG best practices have been well received by the major detector dog associations and a new subcommittee on Outreach and Education has been created to help disseminate the guidelines to the entire community. SWGDOG has included representatives from all of the major canine organizations in this subcommittee and expects that this will help facilitate the adoption of these best practices with thousands of members of the canine community. This is the first time that there have been any consensus based best practice guidelines produced by an international body such as this.

While it is not technically part of the scope of SWGDOG, an accreditation program to be launched within a year based on SWGDOG guidelines will be an important mechanism to facilitate the adoption of these SWGDOG guidelines. The International Commission on Detector Dogs will be formed with a mission to implement SWGDOG

best practice guidelines through voluntary accreditation of certification bodies. Annual meetings will be held and the location will alternate between the United States and an overseas. Meetings will be organized to include discussions of current, pending and needed best practice guidelines and the mechanism for certifying bodies to apply for accreditation through an Accreditation Council made up of representative commission members.

Introduction

It has become increasingly clear that local and state law enforcement as well as a variety of federal agencies including those under the Departments of Homeland Security and Justice can benefit from improvements in the performance and overall reliability of detector dogs and their optimized combination with electronic detection devices. A first step towards broad improvements would be to establish internationally recognized best practice procedures. Establishing best practices for detection teams used in a variety of security settings nationwide will improve interdiction efforts as well as courtroom acceptance of dog alert evidence by improving the consistency and performance of deployed detector dogs. Such highest priority details include securing major national events, protecting borders and screening trafficked goods (including drug interdiction).

In Europe, the Interpol European Working Group on the Use of Police Dogs in Crime Investigation (IEWGPD) was established in 1999 with terms of reference including that "the matter concerns a very specific and reliable resource for policing in general and for crime investigation in particular, which despite technological progress is extremely unlikely to be replaced by human or technical means, either now or in the foreseeable future". The IEWGPD was responsible for drawing up recommendations and regulations aimed at improving the efficiency of the use of police dogs in crime investigation and for promoting their practical application by specialized police units in Europe. The IEWGPD completed their recommendations in 2003.

While there was no comparable working group developing guidelines in North America, in 1998 the National Detector Dog Series was established in the United Stated with the 1st National Detector Dog Conference held at Auburn University. Key features of this series included updates from representatives of various programs and discussions of optimal training and deployment strategies. At the 2nd National Detector Dog Conference ("Training Aids and Certification Standards for the New Millennium"), held at Florida International University (FIU) in Miami, Florida in 2001, general best practices for detector dog teams were drafted. At the 3rd National Detector Dog Conferences ("The Expanding Role of Detection Canines in Homeland Security"), also held at FIU in Miami, Florida in 2003 these general best practices for detector dog teams were refined with the current draft guidelines.

Since the early 1990s, there have been various SWGs formed which are ongoing meetings of practitioners established to improve discipline practices and build consensus with federal, state, and local forensic community partners. [DE & Lothridge, 2000] There are currently more than a dozen different SWGs ranging from Illicit Business Records (SWGIBRA) to Bloodstain Pattern Analysis (SWGSTAIN), for example.

Statement of the problem

The discovery of smuggled contraband and the location of forensic evidence at crime scenes increasingly require the use of sophisticated detectors, such as detector dogs (*canis familiaris*) or electronic sensors. The reliability of detector dogs is increasingly coming into question in courts of law and in the mass media. This is due to limited peer reviewed research on error rates and a lack of common best practices for the certification and maintenance of detection teams. Legal challenges to the use of detector dogs, which have also been widely publicized, have included suspected drug money, narcotics, explosives, cadavers and scent identification cases. A sampling of some recent bylines include; "Dog Trainer Given Maximum Sentence for Fraud: Russell Lee Ebersole Convicted of Providing Bomb-Sniffing Dogs that Couldn't Smell Out Explosives" in the Washington Post, September 8, 2003; "Bones of Contention: Cadaver-sniffing canine's finds are under suspicion" in the Detroit Free Press, July 14, 2003; and "Sit! Stay! Testify! – Dogs have identified suspects in thousands of criminal cases. But how can we be sure that they're telling the truth?" in Fortune, January 26, 2004. U.S. Supreme Court rulings in the 1990's had a significant impact on the admissibility of forensic science evidence, including detector dog alerts, due to an increased demand for quantitative data regarding the reliability of results presented. In Daubert v. Merrell Dow Pharmaceuticals, Inc., 509 U.S. 579 (1993) the U.S. Supreme Court made trial judges "gatekeepers" and offered trial judges specific, but not exhaustive, factors to consider. So-called *Daubert factors* include whether the scientific knowledge can be (and has been) tested, whether it has been subjected to peer review, the size of the known error rate for findings, and whether the knowledge enjoys widespread acceptance in the scientific community. This ruling was further clarified by the U.S. Supreme Court in Kumho Tire, Inc. v. Carmichael, 119 S.Ct.1167 (1999) which established that the reliability criteria of Daubert should apply to all types of expert testimony, including non-technical expertise. This would include expertise based on experience and training such as the use of detector dogs. There has been published articles on the scientific validity of detector dogs trained to detect explosives, accelerants and humans (KG & Myers, 2001) (KG & Harper, Detection of Ignitable Liquid Residues in Fire Scenes: Accelerant Detection Canine Teams and other Field Tests, 2004) (Curran, Rabin, & KG, 2005).

Literature citations and review

The available data demonstrates that detector dogs (*canis familiaris*) still represent one of the fastest, most versatile, reliable and cost effective real-time detection devices available. For example, Table 1 compares instrumental explosive detection devices and trained detector dogs. However, the unique operational complexities of the dog handler team and the limited amount of reliable scientific information makes the implementation of highly reliable and efficient detection teams less straightforward than with analytical instruments. In addition, the reliability of detector dogs is increasingly coming into question in courts of law and in the mass media due to limited peer reviewed research on error rates and lack of common best practices for the certification and maintenance of detection teams. Challenges in the courtroom and the mass media have included suspected drug money, narcotics, explosives, cadavers and scent identification cases. A sampling of some recent bylines include "Dog Trainer Given Maximum Sentence for Fraud: Russell Lee Ebersole Convicted of Providing Bomb-Sniffing Dogs that Couldn't Smell Out Explosives" in the Washington Post, September 8, 2003; "Bones of Contention: Cadaver-sniffing canine's finds are under suspicion" in the Detroit Free Press, July 14, 2003; and "Sit! Stay! Testify! – Dogs have identified suspects in thousands of criminal cases. But how can we be sure that they're telling the truth?" in Fortune, January 26, 2004.

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notes) on U.S. $1 bills at 85 ng/bill on average and THC was present in 22.5% (9 notes) from the other countries with an average amount 49 nanograms/bill) and all of the positive THC found in the New Zealand polypropylene notes (ES, Lavins, & Jenkins, 2004). Since there were no peer reviewed publications demonstrating the threshold of detection of detector dogs, successful courtroom challenges were mounted purporting that due to this widespread contamination, any person carrying circulated currency could potentially initiate a drug dog alert. Reports of widespread contamination of cocaine on circulated currency was relied upon by the 9th U.S. Circuit Court of Appeals (U.S. v . $30,060.00, 1994 WL 613703 (Cal.) which upheld the dismissal of a forfeiture case stating that "… evidence that greater than 75% of all circulated money… is contaminated with drug residue, distinguish this case from our previous cases. We therefore hold that the narcotics detection dog's positive alert to Alexander's money… insufficient evidence to establish probable cause that the money was connected to drugs as required to warrant forfeiture. In the case of the U.S. v $506,231 U.S. Currency (125 F. 3d 442 (1997), the Seventh Circuit court held that a trained drug dog alert to narcotics odor on currency was insufficient to establish probable cause for forfeiture. "The court was unwilling to take seriously the evidence of the post-seizure dog sniff based on the assertion that at least one-third of the currency in the United States is contaminated with cocaine." Subsequently, scientific studies have determined that certified narcotics detector dogs do not alert to cocaine directly and that the dominant cocaine odor chemical is methyl benzoate. In addition, the significant levels required to initiate an alert, rapid dissipation of this odor chemical and the lack of significant levels in common over the counter items or circulated currency enhances the validity of dog alerts to substantively contaminated currency (Furton et. al, 1999; Furton et. al., 2002; Lorenzo, et. al. 2003). These scientific studies have now been used in court to bolster the use of detector dogs in forfeiture cases. For example, in the case of the U.S. v. $22,474 U.S. Currency (99-16611, CV-98-00525-EHC) the Ninth Circuit U.S. Court of Appeals affirmed forfeiture of currency to U.S. government including the opinion filed on April 18, 2001 "Here, the government presented evidence that the dog would not alert to cocaine found on currency in general circulation…"

Scientific studies validating the capabilities of detector dogs will continue to increase the value of said alerts in courts of law but standard protocols for the use of detector dogs teams are also needed to improve the availability of reliability data. The use of a drug dogs for probable cause to search was successfully challenged due to the lack of reliability data in the 2nd District Court of Appeal in the case of Matheson v. Florida, 2003 WL 21766489 (Fla. App. 2 Dist.), where the detector dog "Razor's reliability for detecting the presence of contraband in the field was unguaged… In light of these facts, Razor's alert could not have given the deputies probable cause to search under any test. ". ThereThere are several articlesarticles published on the scientific validity of other detector dogs trained to detect explosives, accelerants and humans (KG &

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Myers, The Scientific Foundations and Officacy of the Use of Canines as Chemical Detectors for Explosives, 2001) (KG & Harper, Detection of Ignitable Liquid Residues in Fire Scenes: Accelerant Detection Canine Teams and other Field Tests, 2004) (Curran, Rabin, & KG, 2005). In these articles theuse of instrumental detection was compared to biological detection of forensic traces including the unique challenges of detector dog teams and the advantage of a more uniformed standard for evaluating their reliability.

While there are scant published studies of the rate of alerts of actual deployed detector dog teams, one study was published in which dogs were trained to alert to an increasing numbers of target pure chemicals (up to 10) and not to alert to pure non-target chemicals (up to 13). The results demonstrated a mean percentage of hits to target chemicals of ca. 90% and false alarms of ca. 5% with no systematic change in hits or false alarms as a function of the number of target odors trained (M & Johnston, 2002). While it is desirable to determine a quantitative number for the reliability dog-handler teams, the overall evaluation of such teams is more complicated than with most instrumental methods and includes behavioral factors such as type and duration of searches, alertness of the team, responsiveness of the dog to the handler and the handler's ability to interpret the dog's behavior. These efforts along with standardization of certification and maintenance training protocols can enhance performance of these teams, allow for objective comparisons and improve the courtroom defensibility of detector dog alert evidence.

Statement of hypothesis or rationale for the research

If SWGDOG develops best practices for detector dogs, disseminate them, and agencies adopt them then the performance of detector dog teams will improve.

While there are very limited studies that critically examine the efficacy of detection teams, standards developed by government agencies and private certifying organizations can provide useful insights into the reliability of detection teams. Important training, maintenance and certification factors include the use of double-blind tests, protocols to minimize contamination of training aids, and negative controls including representative distracters. One very large program is that of the U.S. Department of Defense, which has about 500 explosives detection canines worldwide and has a proficiency requirement of at least a 95% detection rate for the targets (known explosive odor standards) used and a 5% or less nonproductive rate (alerts to distracter odors) (Hannum & Parmeter, 1998). Another large certification program is that administered by the North American Police Work Dog Association, which requires a minimum of 91.6% pass rate on target odors (NAPWDA, 1998). These certification requirements generally meet or exceed the expected 90-95% confidence intervals used in forensic science for instrumental methods and legal

conclusions requiring "beyond a reasonable doubt" (Aitken, 1995). Unfortunately, in 2005 there were no uniform standard and some groups such as the U.S. Police Canine Association, which required only a 70% passing rate for certification whereas others, such as the ATF and the U.S. Customs Service, required100% accuracy for certification. Since the establishment of SWGDOG and the dissemination of SWGDOG best practices these numbers have changed. Table 2 compares drug detector dog certification standards in 2005 for various organizations illustrating the different criteria used by each which makes objective comparisons of detector dog teams problematic.

Since 1998, a detector dog certification program has been carried out under International Forensic Research Institute / National Forensic Science Technology Center guidelines for local and state law enforcement teams, which requires at 90% or greater pass rate to target compounds ("IFRI/NFSTC Detector Dog Certification Guidelines", 2005). During the period 2003-20095742009, 574 total tests have been administered to detectordetector dog teams, including those given for annual re-certifications and those given to teams ≥30 days after a previously failure, the current pass rate being 80%. While it is desirable to quantitatively determine the reliability of dog-handler teams, the overall evaluation of such teams is more complicated than with most instrumental methods. Issues include behavioral factors such as the type and duration of searches, alertness of the team, responsiveness of the dog to the handler and the handler's ability to interpret the dog's behavior. Testing with certified detector dogs under scientifically sound double-blind field tests and publishing peer-reviewed reports will help advance the science of detector dogs.

Methods

The SWGDOG work product is publicly-vetted consensus-based best practice guidelines in each of the nine subject areas corresponding to the SWGDOG subcommittees. The actual "collection of data", if you will--discussions and analysis--will take place primarily during subcommittee meetings with additional feedback provided during SWGDOG general membership meetings. One of the keys to success (and also challenges) is creating subcommittees whose members are not only highly regarded in their field, but the subcommittee as a whole represents a *diversity* of i) expertise, ii) type of organizational affiliation (academic, private, and variety of public institutions), iii) type of job function (scientists, practitioners, policy makers, etc), and iv) geographical location. Regarding the latter, while most of the membership is broadly represented from across the United States, which is important to capture regional differences/needs, the the group does includeinclude a few select international members, such as from the UK, Netherlands, Australia, Finland and Canada, to take advantage of a broader knowledge base and a facilitate cross-exchange of ideas.

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A schematic of the process that ultimately produces the best practice guidelines, as described in the SWGDOG bylaws, is shown in Figure 1 below. It includes a variety of checks and balances including opportunities for the public to weigh in on draft guidelines before they become final work product. To start the process, it is the responsibility of the chair of the executive board working in conjunction with subcommittee chairs (typically chosen from the executive board) to develop a vision and specific objectives for each subcommittee.

Results

Statement of Results

Documents published to date are:

Unification of Terminology: a
Final Approval: April 2, 2006

Unification of Terminology: b
Final Approval: October 2, 2006

Unification of Terminology: c
Final Approval: March 12, 2007

Unification of Terminology: d
Final Approval: August 15, 2007

Unification of Terminology: e
Final Approval: March 12, 2008

Unification of Terminology: f
Final Approval: September 17, 2008

Unification of Terminology: g
Approved pending editorial revision: September 15, 2009

Unification of Terminology: h
Approved pending editorial revision: September 15, 2009

Unification of Terminology: i
Approved for public comment, pending editorial revision: September 15, 2009

General Guidelines
Final Approval: April 2, 2006

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General Guidelines – Revision
Approval pending editorial revision: September 15, 2009

Selection of Serviceable Dogs
Final Approval: October 2, 2006

Kenneling & Healthcare
Final Approval: October 2, 2006

Selection & Training of Handlers & Instructors
Final Approval: October 2, 2006

Presentation of Evidence in Court
Final Approval: October 2, 2006

Research & Technology
Final Approval: March 12, 2007

Substance Dogs: Accelerants
Final Approval: August 15, 2007

Substance Dogs: Agriculture
Final Approval: August 15, 2007

Substance Dogs: Explosives
Final Approval: August 15, 2007

Substance Dogs: Human Remains Detection
Approval pending editorial revision: September 15, 2009

Substance Dogs: Narcotics
Final Approval: August 15, 2007

Scent Dogs: Non-specific Human Scent Wilderness Area Search
Final Approval: August 15, 2007

Scent Dogs: Pre-scented Canine Searches
Final Approval: August 15, 2007

Scent Dogs: Location Checks
Final Approval: March 12, 2007

Scent Dogs: Article Search
Final Approval: March 12, 2007

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Scent Dogs: Disaster Search (Searching for Live People)
Approved for public comment, pending editorial revision: September 15, 2009

Scent Dogs: Scent Identification Lineups
Approved for public comment, pending editorial revision: September 15, 2009

Scent Dogs: Tracking/Trailing people based on last known position
Approved for public comment, pending editorial revision: September 15, 2009

Those documents that aren't hyperlinked here are under editorial review and will be posted to the public site, www.swgdog.org, once the review has been completed.

Tables

Table 1. Some comparisons between instrumental explosive detection devices and trained detector dogs.

#	Aspect	Canine	Instrument
1	Duty cycle	Ca. 8 hr/day (30-90 minutes continuous searching)	24 hr/day (theoretically not practically)
2	Calibration standards	Usually run individually	Can be run simultaneously (for separation based systems)
3	I.D. of target substance	Not trained to I.D. with different alerts	Presumptive I.D. generally possible
4	Operator/handler influence	A potential factor	Less of a factor
5	Instrument lifetime	Generally 6-8 years	Generally ca. 10 years
6	State of scientific knowledge	Late emerging	Relatively mature
7	Target chemical(s)	Odorant signatures/mostly unknown	Parent substances detected well studied
8	Courtroom acceptance	More often challenged	Generally unchallenged
9	Ruggedness	Very durable under variable conditions	Susceptible to mechanical shock
10	Selectivity (vs. interferents)	Very good	Sometimes problematic
11	Overall speed of detection	Generally faster	Generally slower
12	Mobility	Very versatile	Limited at present
13	Integrated sampling system	Highly efficient	Problematic/inefficient
14	Capable of stand off detection	Yes, can indicate away from source	Not at present
15	Scent to source	Natural and quick	Difficult with present technology
16	Intrusiveness	Often innocuous (breed dependent)	Variable depending on technology
17	Initial cost	ca. $6,000 (without training) ca. $25,000 (with team training)	ca. $60,000
18	Annual maintenance costs	ca. 6,000 but variable (vet and food bill and overtime pay/or comp time)	ca. $6,000 (supplies and service contract)
19	Size	Variable – typical smallest size ca. 15 lbs (Jack Russel)	Variable – typical smallest size ca. 25 lbs (IMS)
20	Environmental conditions	High temp. may adversely affect	High temp. may adversely affect
21	Sensitivity	Very good/few studies	Very good/well known

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22	Toxicological considerations	Minimal unless excessive levels	Minimal unless excessive levels
23	Downtime	Varies with breed, handler and medical condition	Varies with instrument, operator and manufacturer
24	Instrument components	Agencies use variable breed, training, alert and reward systems	Manufacturers use variable sampling, separation and detection systems
25	Initial calibration	Generally performed by supplier (specifications vary by supplier)	Generally performed by manufacturer (specifications vary by manufacturers)
26	Operator training	Typically 40 hour course minimum	Typically a 40 hour course
27	Certifications	Annually to biannually	Varies, annually to biannually
28	Re-calibrations	Daily to weekly	Daily to weekly
29	Scientific foundations	Neurophysiology, behavioral psychology, analytical chemistry	Electronics, computer science, analytical chemistry
30	Affects on performance	Disease conditions	Electronic or mechanical malfunction

Table 2. Comparison of drug dog certification standards for various agencies in 2005.

Agency	CNCA	IFRI/NFSTC	NAPWDA	NNDDA	PNWDDA	USPCA
Target Odors	**Ma, Co, Me, He,** Op	**Ma, Co, Me, He,** Ha, X, Op	**Ma, Co, Me, He,** Op	**Ma, Co,** Me, He, Op	**Ma/Ha, Co/Cr, Me, He**	**Ma/Ha, Co, Me, He**
Mass range	5g5g - 2kg	1g - 1kg	Not specified	7g7g - 28g	3.5g - 900g	≥ 5g
# of search areas	NotNot specified	≥ 2 types of areas	≥ 3	≤ 2 sections of a building. One for each type of drug.	3	3 rooms and 5 vehicles
Type of areas	B, V	B (200-1200 sf/room), V, L (10 - 15 articles), Other	B, V, L, Other	B (≤1000 sf, sectioned into areas for each drug hide)	B (≤1000 sf), V, L/P, OF (optional)	B (≤ 200 sf), V
# hides / area	2	1	All types of hides are in all areas	2 of same drug/section. Each section gets a different drug	Not specified, but must be ≥ 2 hides of each drug category overall	2 hides total in rooms search. 2 hides total in vehicles search
Total # hides	Not specified	10 min	12	≥4	10	4
Vehicle search protocol	3 total, of which 1 is blank. Interior and/or exterior	≥ 3 total. At least 1 exterior, 1 interior, 1 blank	1 blank	Not applicable	3 total. Interior and/or exterior	5 total (could be cars, trucks, buses, airplanes, or boats). Interior and/or exterior
Passing Guidelines	≥ 50%/100%: Team must locate at least 1 of 2 find in 100% of the areas. Ma, Co, Me, He must be found	≥ 90% of at least 10 finds.	≥ 91.6%: 11 out of 12 finds. No more than 1 FN acceptable. Certification is specified per drug. (for up to 4 drugs)	≥75%: 3 out of 4 finds (if only Ma and Co). No more than 1 FN acceptable. Ma and Co must be found. Other drugs are optional	≥ 90%: 9 out of 10 finds. 2 FP's or 1 FP and 1 FN = fail. Ma, Co, Me, He must be found.	≥70%: 140 out of 200 pts grading various aspects of dog and handler. 2 hides are Ma/Ha. 2 hides chosen from: Co, Me, He
Time limits	4min4min/bldg. 5min/3 vehicles	5 min / individual search	At the discretion of Master Trainer	3 min / each search area	At the discretion of certifying official	10-15 min/5 vehicles. 1.5 min/100 sf of room

Key to agencies: **CNCA** = California Narcotic Canine Association; **IFRI/NFSTC** = International Forensic Research Institute / National Forensic Science Technology Center; **NAPWDA** = North American Police Working Dog Association; **NNDDA** = National Narcotic Detector Dog Association; **PNWDDA** = Pacific Northwest Police Detector Dog Association; **USPCA** = United States Police Canine Association.

Key to terms: **Ma** = marijuana; **Ha** = hashish; **Co** = cocaine hydrochloride; **Cr** = cocaine free base (crack); **Op** = opium; **Me** = methamphetamine; **He** = heroin; **X** = MDMA (ecstasy); B = building or room; V = vehicle; L = luggage; P = package; OF = open field; **FP** = False Positive; Alerting to a blank or distractor odor; **FN** = False Negative; Failing to alert to a target odor. regular font = optional; **bold = required**

Figures

Figure 1. A schematic of the process that ultimately produces the best practice guidelines, as described in the SWGDOG bylaws.

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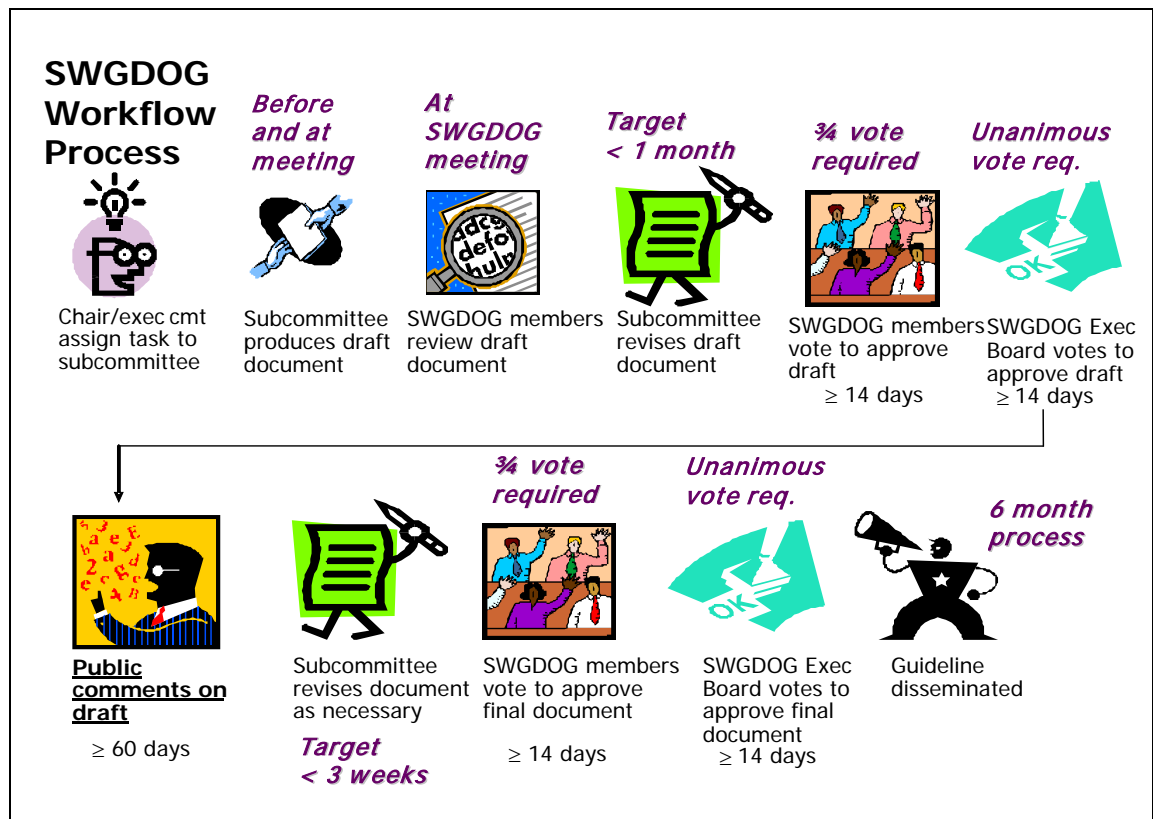
Figure 2. A schematic demonstrating the concept as a cyclic process of an optimized detector dog certification program with mechanisms for continuous improvement.
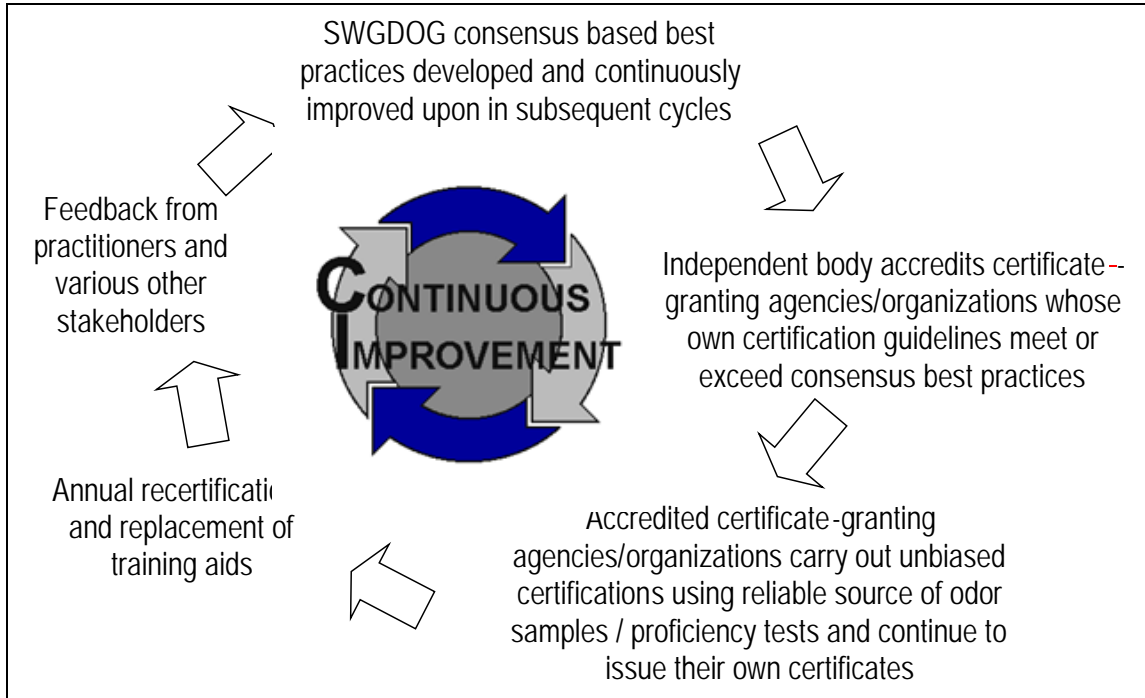
Conclusions

Discussion of findings

Overall, the SWGDOG best practices have been well received by the majority of the detector dog community. A subcommittee 10 on Outreach and Education was created during the September 2009 meeting to help disseminate the guidelines to the entire community via the SWGDOG members themselves. SWGDOG has included representatives from all of the major canine organizations in this subcommittee and expectsexpects that this will help facilitatefacilitate the adoptionadoption of these best practices with thousands of members of the canine community.

Implications for policy and practice

This is the first time that there have been any consensus based best practice guidelines produced by an international body such as this. Due to the diversity and breadth of topics covered by SWGDOG, it has taken longer than

originally anticipated to complete all best practice documents. Within one year we will have completed documents in all nine areas as well as completed the first revisions of approximately half of the documents previously approved.

From its inception, the role of SWGDOG hashas been defined *not* to set policy and practice for any agencies. The concept is that this is something that must come about voluntarily from within agencies or mandated by their parent agency, as appropriate for a given agency. To repeat, SWGDOG is not a mandate, but rather a resource for consensus based best practices available to the orthogonal detection community. That said, we certainly anticipate that SWGDOG will have a broad and positive impact on policy and practice.. For example, a very important mechanism to facilitate adoption of best practice procedures with regard to annual certification protocols would be to accredit existing certificate granting agencies and organizations by an independent accrediting body. A similar model was adopted based on the recommendations of other working groups as the basis for accreditation programs carried out by third parties has been successfully implemented in other forensic disciplines.. Such accreditation would validate that the agency in question meets or exceeds SWGDOG consensus best practice guidelines. A schematic depiction of this process and mechanisms for continuous improvement of detector dog certification programs is illustrated in the following diagram.

SWGODG has requested an additional year of funding through TSWG. This funding will complete the SWGDOG process and also allow for the implementation of the best practices in the community via implementation of an accreditation commission that will facilitate adoption of these guidelines. As the adoption of these best practices increases through the accreditation process, the safety and security of the country will be significantly enhanced.

The most important mechanism to facilitate the adoption of SWGDOG guidelines would be creating the International Commission on Detector Dogs which will be formed with a mission to implement SWGDOG best practice guidelines through voluntary accreditation of certification bodies. Annual meetings will be held and the location will alternate between the United States and an overseas. Meetings will be organized to include discussions of current, pending and needed best practice guidelines and the mechanism for certifying bodies to apply for accreditation through an Accreditation Council made up of representative commission members. A schematic of the process is shown in Figure 2.

Implications for further research

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Subcommittee seven on Research and Technology has identified several areas where research is needed as well as a database of existing peer-reviewed literature and potential funding agencies in order to facilitate advancing the knowledge base in each area. Once research is done in these areas, SWGDOG best practices will be further refined incorporating the latest knowledge in each subject area.

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Dissemination of Research Findings

All approved guidelines will be published in Forensic Science Communication. Below are the published and pending articles as well as other publications.

K.G. Furton and D.P. Heller, Advances in the reliable location of forensic specimens through research and consensus best practice guidelines for dog and orthogonal instrumental detectors, Canadian Journal of Police & Security Services, Special Issue: Advances in Forensic Science, Vol. 3, Issue 2 (2005), 97-107.

Scientific Working Group on Dog and Orthogonal detection Guidelines, Scientific Working Group on Dogs and Orthogonal Detection Guidelines: General Guidelines for Training, Certification, Maintenance, and Documentation, Forensic Science Communication, Vol. 8 (4), 2006.

R. Kanable, The best from man's best friend, Law Enforcement Technology, September 2007.

Scientific Working Group on Dog and Orthogonal detection Guidelines, Scientific Working Group on Dogs and Orthogonal Detection Guidelines: Selection of Serviceable Dogs, Forensic Science Communication, Vol. 10 (4), 2008.

T. Fleck, SWGDOG (Scientific Working Group on Dog and Orthogonal detection Guidelines), K-9 Cop Magazine, February/March 2009.

K.G. Furton, Detector Dogs: From Procurement to Prosecution, part of Advances in Forensic Techniques Series. CRC Press 2010. Edited book under preparation based on SWGDOG best practice guidelines.

Presentations including updates on the SWGDOG process are given below:

<u>K.G. Furton</u> and D. Heller, The Reliable Location of Forensic Specimens Through Research and Best Practice Guidelines for Dog and Orthogonal Instrumental Detectors (paper #40), ACS Florida Annual Meeting and Exposition (FAME) 2005, Orlando, Florida, May 5 – 7, 2005.

<u>K.G. Furton</u>, Advances in the Chemistry of Scent, California Narcotic Canine Association (CNCA) Annual Training Conference, Burbank, California, January 9-11, 2006. Invited instructor for two 2-hour sessions.

<u>K.G. Furton</u>, Chemistry of Scent and SWGDOG/Research in the K-9 Field, 2 Invited lectures at the Ke Kula Maka'I Canine Training Facility Seminar, Hawaii, February 20-24, 2006.

<u>R. J. Harper</u> and K.G. Furton, Development of Scientifically Sound Protocols for the Training of Explosive Detection Canines (B11), 58th Annual American Academy of Forensic Sciences Meeting, Seattle, Washington, February 20 - 25, 2006.

<u>K.G. Furton</u>, Optimizing the Combination of Biological and Instrumental Detectors, Invited speaker at the workshop "Use of Dogs for Helping Forensic Investigation" organized by Silke Löffler, 4th European Academy of Forensic Science Conference, Helsinki, Finland, June 13-16, 2006.

<u>K.G. Furton</u>, L. Conner, R. Griffith, J. Aarons, M. Macias, S.S. Tolliver and, A.M. Curran, Improved detection of accelerants, biotoxins, currency, drugs, explosives and humans by canines and instruments through optimal combination of odor signature chemicals (F72), 4th European Academy of Forensic Science Conference, Helsinki, Finland, June 13-16, 2006.

<u>K.G. Furton</u>, Chemistry of Scent: Science behind K9 detection of contaminated currency, narcotics, explosives and human scent, California Narcotic Canine Association (CNCA) Annual Training Conference, Burbank, California, January 9-11, 2007. Invited instructor for two 2-hour sessions.

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K.G. Furton, J. Greb and H. Holness, Scientific Working Group on Dog & Orthogonal detector Guidelines (SWGDOG), NIJ Grantees Forum, 59th Annual Scientific Meeting of the American Academy of Forensic Sciences, San Antonio, TX, February 19-24, 2007.

A.M. Curran, Jessie Greb and K.G. Furton, *SWGDOG:* Best practice guidelines for improved biological and instrumental detection, Invited presentation for the Novel Programs and Standards Panel, 4th NIJ Applied Technology Conference, April 3 – 5, 2007, Garden Grove, California

K.G. Furton, The science behind the canine detection of contaminated currency, narcotics, explosives and human scent, Advances in the Chemistry of Scent, invited Featured Speaker at the Pacific Northwest Police Detection Dog Association Annual Conference, Bellingham, WA, May 21 – 25, 2007.

K.G. Furton, Development of Best Practice Guidelines for Detector Dogs and their Optimal Combination with Instrumental Detection, Invited speaker at the 2007 National Search and Rescue Conference, Charlotte, NC, May 31-June 2, 2007.

K.G. Furton, Latest capabilities of canines and instruments from A to F (accelerants, biotoxins, currency, drugs, explosives and flesh), Invited keynote speaker at the UKLEADS 7th International Seminar on Detection Dogs, Tullialian Castle, Fife, Scotland, June 8 – 10, 2007.

K. G. Furton, Canines in Court: From Civil Forfeitures to Human Scent Criminal Cases, Invited panelist for session "The Future of Evidence", ABA Section of Science & Technology Law, American Bar Association Annual Conference, San Francisco, CA, August 8 – 14, 2007

K.G. Furton, Chimie des odeurs, Invited talk at Horaire du seminaire de L'AMCPQ, September 9-14, 2007, St-Jean-sur-Richelieu, Quebec, Canada.

K.G. Furton, Detection of drugs, explosives and humans: Dogs vs Machines, invited talk for special session "Advances in Spectroscopy and Mass Spectrometry in Forensic Sciences" at the 34th Annual Meeting of the Federation of Analytical Chemistry and Spectroscopy Societies (FACSS), Memphis, TN October 14-18, 2007.

K.G. Furton, Capabilities of Canines and Contraptions from A to F - Accelerants, Biotoxins, Currency, Drugs, Explosives and Flesh (dead and alive), Invited featured speaker at the 1st Detector Dog World Congress – Spain 2007, Barcelona, Spain, November 7-10, 2007.

K.G. Furton, Current Capabilities of Machines, Man and Man's Best Friend- Locating accelerants, biotoxins, currency, drugs, explosives and flesh, Invited speaker at the

special seminar for Middle and High School Teachers entitled "Differences in Scent Discrimination between Dogs, Man and Machines " at the 2007 Eastern Analytical Symposium, Somerset, New Jersey, November 11, 2007.

K.G. Furton, Chemistry of Scent: Science behind Canine location of contaminated currency, narcotics, explosives and human scent, California Narcotic Canine Association (CNCA) Annual Training Conference, Burbank, California, January 8-10, 2008. Invited instructor for two 2-hour sessions.

K.G. Furton, J. Greb and H. Holness, Optimized location of Forensic Evidence by Canines and Instruments Through Implementation of Best Practice Guidelines and SPME/GC-MS Methods, 60th Annual Scientific Meeting of the American Academy of Forensic Sciences, Washington, DC, February17-22, 2008.

K.G. Furton, The Detection of Human Scent Traces and the Development of Best Practice Guidelines, HITS 2008, Handler Instruction and Training Seminar, Denver, Colorado, May 28-31, 2008.

K.G. Furton, Chemistry of Scent: Science behind K9 detection of contaminated currency, narcotics, explosives and human scent, California Narcotic Canine Association (CNCA) Annual Training Conference, Burbank, California, January 12-15, 2009. Invited instructor for two 2-hour sessions.

K.G. Furton, The Scientific Working Group on Dog and Orthogonal Detector Guidelines, A118, 61st Annual Scientific Meeting of the American Academy of Forensic Sciences, Denver, Colorado, February 17-22, 2009.

K.G. Furton, Identifying Odorants and Establishing Best Practice Guidelines for Explosive Detection Canines, Invited speaker for Workshop "Measurements and Standards for Trace Explosives (2080-4), PittCon 2009, Denver, Colorado, March 8-13, 2009.

T.G. Anderson, The Scientific Working Group on Dog and Orthogonal Detector Guidelines, NPCA Regional Event, Wyoming, May 2009.

 T.G. Anderson, The Scientific Working Group on Dog and Orthogonal Detector Guidelines, NPCA National Training Seminar, Delaware, October 2009.

SWGDOG SC1abcdef – TERMINOLOGY

SC1a – Posted for public comment 12/28/05 – 2/28/06. Approved by the membership 4/2/06.
SC1b – Posted for public comment 4/22/06 – 6/22/06. Approved by the membership 10/2/06.
SC1c – Posted for public comment 1/3/07 – 3/3/07. Approved by the membership 3/12/07.
SC1d - Posted for public comment 5/10/07 – 7/8/07. Approved by the membership 8/15/07.
SC1e - Posted for public comment 12/10/07 - 2/7/08. Approved by the membership 3/12/08.
SC1f – Posted for public comment 4/15/08 - 6/13/08. Approved by the membership 9/17/08.

Term	Meaning	Annotations
Absolute Threshold	Operational usage: The minimum intensity of a stimulus that is detected by a particular dog. In the case of odor it is the minimum concentration of vapor. This threshold varies from dog to dog and is affected by climate and the internal and external environment. Scientific usage: AT is determined by a statistical average based on the point where a specific compound can be detected 50% of the time.	Note: This definition acknowledges that large and small amounts of the same compound don't necessarily smell the same to the dog. The "absolute" may not be as relevant as it was formerly because of recent developments in learning.
Accidental reinforcement / Cueing	Scientific usage: Reinforcement delivered independently of any response on the part of the subject. Despite the lack of a 'true' cause-and-effect relationship between the individual's responses and the received reinforcements, adventitious reinforcement can have a powerful effect on behavior. Example: Famous psychologist, BF Skinner had food delivered to a pigeon every 15 seconds independently of anything the pigeon	Accidental reinforcement should not be confused with *inadvertently reinforcing an undesired behavior*, which is not accidental and does not select for randomly associated behaviors. See also inadvertent reinforcement. It is important for all trainers to understand the difference

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	did. Soon he observed that most of the pigeons were performing idiosyncratic behaviors that they had not performed before. One bird turned in circles, another pecked at the wall, another pecked at the floor. These were the behaviors that the individual pigeons were exhibiting when reinforced. Because they made the associ-ation with a highly desirable reinforcer and the exhibition of the behavior they were exhibiting at the time, they repeated that particular behavior.	between these 2 phenomena, because *accidental reinforcement can have profound and adverse consequences in dogs trained for performance or work.* For example, when teaching a behavior and attempting to lengthen the time from the response to the reward, the dog has a tendency to offer various behaviors in anticipation of the reward. If the reward happens to coincide with one of these random behaviors then that behavior could be "accidentally" reinforced.
Acclimation / Environmental Conditioning	Operational usage: A period of time used for the dog to become adjusted to its environment. Scientific usage: Adaptation or adjustment to a new circumstance.	Acclimation is very important when moving animals from one facility and/or environment to another because this can be a time of increased morbidity / mortality.
Accuracy	Scientific usage: A measure of the extent to which the process is unbiased so that the measured values reflect the true values; measurements are accurate if they lack *systematic* errors (precise measures lack *random* errors).	
Acquired Behaviors	Scientific usage: Behaviors that are learned and not innate.	
Active Adaptation (physiological term)	Scientific usage: A temporary change in the responsiveness of a sensory receptor or a sense organ. Example: If a light is repeatedly flashed in your eye, you eventually cease responding to it. This is because of fatigue of the receptor.	Active adaptation is very different from habituation in that this adaptation involves the sensors, only. Habituation involves learning, also. This may only be a factor at the extremes. For example, acute exposure to a very high concentration of a target odor. This ordinarily will not occur

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		in a working dog scenario even in the situation where a very large amount of a target material is present.
		See also Saturation.
Active avoidance	Scientific usage: A non-reflexive response made in order to avoid an aversive event.	Active avoidance is usually contrasted with passive avoidance where the animal learns that it must refrain from making a response.
Activity Drive	Operational usage: The propensity to be active.	See Drive.
Adaptation	Scientific usage: In evolution a change in behavior or in form over time that helps the animal to survive.	The ability to learn to exhibit certain behaviors in certain contexts is likely an adaptation. For example, baying of hounds is likely an adaptation to the types of behaviors or jobs for which they were developed. A thick undercoat and heavily plumed tail are likely adaptations for a cold environment in Nordic breeds, e.g., Malamute.
Adipocere	Semi-solid / liquid (cheesy) decomposition product of human remains.	
Adolescent dog	Scientific usage: A dog that has not yet reached social maturity.	
Adult dog	Scientific usage: A dog for whom physical growth is complete, and who has reached social maturity.	
Aged trail	A trail that has been present for some period of time.	
Aggression	Scientific usage: Description of an act that is an outcome of an agonistic interaction. It can be appropriate or inappropriate, and involve a threat, challenge or contest.	Note: The word "aggressive" is often used as a descriptive term for intense, enthusiastic, or forceful behavior of any kind, and these dogs may not be truly aggressive or possess aggression.
Aggressiveness	See aggression.	
Agility	Operational usage: A character trait which describes the natural (running)	

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	speed, surefootedness, and coordination, and the ability of the dog to correct and recover.	
Agility Course	Operational usage: Series of operationally relevant obstacles designed to acclimate the dog to various stressful environments and increase the dog's capability to successfully perform in those environments, or test the dog's capability to perform in a [pet] competition environment.	
Air Scent Dog	Operational usage: A dog using air scenting techniques to detect a trained odor.	
Air Scent Drive	Operational usage: The propensity to locate targets by using windborne odors.	See Drive.
Air Scenting	Operational usage: A technique used by a dog to locate a target odor. The dog searches for target odor on wind / air currents and attempts to identify / work on a scent cone to the source.	
Alert	A characteristic change in ongoing behavior in response to a trained odor, as interpreted by the handler. The components of the alert may include: COB, interest, and final response or indication.	Alert has been used / defined by various agencies as a range of responses from a change of behavior to a final response. With the advent of SWGDOG guidelines an attempt has been made to standardize certification, and the tasks in which the dog must succeed have been more specifically defined across disciplines than has been done previously. Because of this, it may be useful to more narrowly define the various stages of canine detection behaviors that are clear to skilled handlers. Accordingly, we have defined interest, COB, and response. Implicit in these recommended best practices concerning

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		training, certification, and operational situations, is that handlers should move away from less specific descriptions to more specific ones. The resultant clarity will benefit dogs, handlers, trainers, and the judiciary in producing the clearest possible outcomes. It is the handler's responsibility to report when the dog has alerted and to identify what behavior the dog uses to do so.
Allele	Scientific usage: One of the possible forms of a given gene; alleles of a particular gene occupy the same position on locus on the homologous chromosomes (e.g., each chromosome set comes as a pair - each parent contributes1 set of info to complete the pair).	
Anthropocentrism	Assuming that the animal see things from a human viewpoint.	
Anthropomorphism	Attributing human values, emotions, and thought processes to an animal.	
Approach-approach conflict	Scientific usage: A conflict resulting from having the choice of two equally desirable but mutually incompatible, unobtainable goals or stimuli. The conflict is generally resolved when one gets behaviorally or physically closer to one of the two goals or stimuli since desirability increases with closeness. This type of conflict is easily solved by approaching one of the sources of reinforcement, or by having one of the sources of reinforcement approach the individual making the decision.	Ex. If you have a male dog that is trained to detect target odor and is in the process of detecting the odor and you also have a bitch in heat at a distance, the male becomes more distracted as the bitch approaches.
Approach-avoidance conflict	Scientific usage: A conflict resulting from being both drawn and repelled by the same stimulus. With distance the stimulus appears more desirable,	Ex. This can be seen in Human Remains Detection (HRD) dogs that tend to shy away from overpowering amounts of odor

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	and with closeness the stimulus seems less desirable, in contrast with approach-approach conflict. As the individual approaches, because the stimulus appears less desirable the individual withdraws, leading to an increase in the stimulus's perceived positive features relative to the negative ones. More information about relative value and outcomes can resolve these situations, but if they are unresolved, **displacement behavior** may occur**.**	(whole bodies) when they have been trained on in smaller amounts of odor (body parts and/or fluids).
Approximation / Shaping by successive approximation	(Scientific usage) The reinforcement of successive stages towards the direction of the final behavior. Breaking a complex behavior down into small behaviors (baby steps) to train one step at a time reinforcing the animal each time it accomplishes a step towards the final behavior.	
Articles	Operational usage: Objects left on the track or in a search area at various intervals to which the dog is expected to indicate.	
Aversive Conditioning	Scientific usage: Training procedure relying on the use of unpleasant stimuli. For example, when a dog receives a pop on the leash as it is lunging for food on the floor in the work environment. Dog learns that lunging for food is an unpleasant experience.	
Aversive Stimulus	Scientific usage: A stimulus that an animal will work to terminate or avoid.	
Avoidance Learning / Avoidance Conditioning	Scientific usage: The process in which an animal responds to a signal to avoid unpleasant consequences (aversive stimulus).	Ex. A dog sits on command to avoid a correction.
Avoidance Training	Scientific usage: See Avoidance Learning.	
Avoidance-	Scientific usage: A conflict resulting	Ex. If the handler has made an

avoidance conflict	from being repelled by two undesirable goals or stimuli when there are strong pressures to choose one or the other. Often when the conflict is intense the individual will refuse to choose between the alternatives.	error and corrects the dog inappropriately while the dog is working the target odor then the dog can associate the odor with the correction and therefore avoids the odor.
Backward Chaining	Scientific definition: Process in which an animal learns to emit a series of responses. A chain is trained backwards, beginning with the last behavior, then the second to last behavior, et cetera.	
Baseline (or base rate)	Scientific usage: The normal frequency of occurrence of any response per unit of time for that individual or group of individuals.	The purpose of all training is to either increase or decrease the frequency of a behavior from its baseline level. Baseline usually refers to the frequency of a behavior before training starts. For example, all dogs will sit at some individual rate (a baseline). Once trained, a dog that sits on target odor is increasing the frequency of the behavior above baseline. If the frequency reliably increases or decreases from the baseline, then training was effective.
Behavioral Chain	A series of independent behaviors that are linked together.	Detection dog example for chaining: A dog is taught a sit command. The dog is now introduced to a box with a target odor inside and staring is elicited in anticipation of a reward. Once the behavior of staring into the box is learned, the sit behavior is added, chaining the stare and the sit. See Chaining.
Blank Search	Operational usage: A training or certification exercise in which the target odor is not present.	
Blind experiments	Scientific usage: Experiments are	

	considered blind if the person obtaining the measurements does not know what the treatments were.	
Blood line	Operational usage: The direct ancestors in the dog's pedigree.	Note: Pedigrees are routinely printed showing 4-5 generations, including that of the dog in question.
Boldness	Scientific usage: A characteristic of a dog that is resilient in novel or stressful situations, exhibits minimal fear, and recovers quickly.	
Bone **"Dry" bone**	Skeletal remains that have no soft tissue or fluid.	
Bone **"Wet" bone**	Skeletal remains that have soft tissue or fluid.	
Breeds of dogs	Operational usage: Groups of dogs based on canalized or restrictive gene pools derived by selective breeding by humans for behavior or function and / or conformation. When sire and dam come from the same breed, puppies are expected to fall within the broad outlines of the breed standard, which outlines physical and behavioral attributes said to be typical of the breed.	Note: Recent (2004, 2005) genetic information indicates that members of breeds are genetically more similar to each other than they are to members of other breeds, and breed groups developed for more similar purposes (e.g., herding) are more similar to each other than are breed groups developed for different purposes.
Bridge or bridging stimulus	A stimulus that fills the gap between a correct response and a delayed primary reinforcer and is intended to function as a secondary reinforcer that reduces the otherwise weakening of the primary reinforcement due to the delay. The classic stimulus used as a 'bridge' is a clicker.	Functionally, the bridge is used to specifically reinforce a behavior performed at a distance where it is impossible to provide a primary reinforcement at the correct time. If used correctly, the bridge reinforces at the exact instant when an animal successfully completes a desired behavior, or the exact time when an ongoing behavior should be stopped. There should be no variations on the bridge's form, duration, or intensity. The bridge should be frequently paired with the primary reinforcer in order to

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		maintain its value. Also see Conditioned reinforcer.
Cadaver	Scientific usage: A dead body or the remains of a dead body.	
Canine	Scientific definition: A dog, *Canis familiaris*, more commonly used to denote a working dog and sometimes abbreviated as K-9.	
Canine Team	Operational usage: A human and working dog that train and work together as an operational unit.	
Casting	Operational usage: 1. A description of the dog's movement as the dog searches for and/or follows the concentration of target odor. 2. A directional command to the dog.	See Bracketing.
Certification	A process that attests to the successful completion of an examination of relevant skills for the canine team.	
Certifying Officials / Assessors	Suitably authorized individuals trained to administer and assess an examination of relevant skills for canine team.	
Chaining	The process of linking behaviors together in order to form a chain.	In most cases, each component of the chain is individually learned and the "chaining" consists of linking them together, usually starting with the final behavior and then adding the next-to-final behavior and so on. This is often called backward chaining or linking in reverse order. See Behavior Chaining; Chain-of-behaviors
Chain-of-behaviors	Two or more behaviors that occur in a fixed order. The termination of the first behavior is the signal to start the second behavior.	See Behavior Chaining, Chaining
Change of behavior	Operational usage: A characteristic	The initial change of behavior

(COB)	pattern of behaviors, as interpreted by the handler, that occurs when the dog detects a trained odor. This differs from other olfactory interest that otherwise are exhibited by the dog in response to the daily environment.	typically leads to following the odor to its source and then giving the trained response. The pattern of behavior may be unique to each dog. See Alert.
Character / Personality Traits / Dimensions	Scientific usage: Behavioral qualities that are relatively constant and reliable, and frame or affect the dog's response in all contexts. The best scientific evidence for these patterns is for what has been called shyness / nervousness and boldness in dogs.	
Chromosome	Scientific usage: Threadlike structure of DNA and RNA that carries genes and that resides in the nucleus of each cell; chromosomes are paired in body or somatic cells (= diploid or 2N) and occur in single copies or ½ the pair in sex cells (= haploid or 1 N); the number of chromosomes found in each nucleus - the diploid # - is characteristic of each species (humans have 23 pair of chromosomes or a diploid # of 46; 1 pair of chromosomes determine sex, and the others are called autosomes; dogs have 39 chromosome pairs, 38 of which are autosomes).	
Classical Conditioning	Scientific usage: Classical or Pavlovian conditioning is a form of learning by making associations. In the true sense it involves a neutral stimulus, an unconscious response, and a conditioned response that links the first two. Classical conditioning is a simple form of behavior modification where a neutral stimulus elicits the behavior for which there was formerly no association. Once established, classical conditioning leads to anticipation.	

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Coercion Training See Positive Reinforcement; motivation	Scientific usage: Coercion deals with compliance induced by physical or mental pleasure.	
Cognition	Scientific usage: The mental process by which an animal solves problems.	
Comprehensive Assessment	Operational usage: An extended single blind exercise.	
Compulsion Training	Scientific usage: Training by the use of threat or force.	
Concentration	Operational usage: The dog's focus on the area of search (further specification will be discipline specific).	
Conditioned Aversive Stimulus	Scientific usage: A stimulus that is initially neutral but has acquired aversive properties by virtue of being paired with aversive events.	
Conditioned aversive stimulus	As a result of classical conditioning, an event that is initially neutral will acquire aversive properties because it is paired with other aversive events. This is exactly like the bridge, but it happens with aversive events.	Ex. A "leave it" command is associated with a physical/verbal correction.
Conditioned Fear	Scientific usage: Fear in response to a previously neutral stimulus caused by aversive conditioning and/or event. See Fear.	
Conditioned Reinforcer	Scientific usage: A previously neutral stimulus that has become reinforcing because of its association with a primary reinforcer. A stimulus that becomes a reinforcer because it is paired with another reinforcer, usually a primary reinforcer. If conditioned reinforcers are not maintained by periodically pairing them with primary reinforcers, they will lose their reinforcing value.	Example: A previously neutral clicker comes to have reinforcing properties because of its pairing with the delivery of food. See Bridge. Also referred to as secondary reinforcer.
Conditioned Response	Scientific usage: See classical conditioning (CR).	
Conditioned	Scientific usage: See classical	

Stimulus	conditioning (CS).	
Conditioning	A general term that explains how animals learn the connection between stimuli, events, and actions.	See Classical conditioning and operant conditioning.
Confidence	Operational usage: When a dog is conditioned to know when it can act on its abilities. An environmentally conditioned acceptance of safety. The dog is conditioned in such a way that it anticipates that it can accomplish the behavior safely.	
Confirmed Alert	Operational usage: An alert for which the presence of a trained odor can be verified or corroborated.	Also referred to as a "hit", "find" and/or "positive response".
Conflict	A condition in which two or more events cause incompatible responses.	
Confounding factors	Scientific usage: These are the other things that change in the course of an experiment that should be controlled.	Note: If you don't control these aspects you are at risk for not measuring what you think you are measuring.
Consistency / reliability	Scientific usage: See Reliability / consistency; consistent measures are those where repeated measurements of the same thing produce the same results.	
Contaminating odor	Operational usage: Of target: any odor not ordinarily part of a target odor signature. Of area: any odor not normally part of the context of that area.	
Continuous reinforcement (CRF)	A schedule of reinforcement where every occurrence of the behavior is reinforced.	
Control	Scientific usage: The variable that does not change in an experiment.	
Co-ordination/ Timing	Operational usage: The handler's ability to correctly recognize and reward a desired behavior of the dog, or redirect or stop an undesired behavior.	
Correction	Operational usage: An aversive stimulus intended to prompt the dog to respond appropriately to a handler	

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	using a device such as a verbal reprimand, choke collar (slip) / check chain, prong collar, remote trainer, etc.	
Correlation	Scientific usage: A correlation is an association between 2 variables, when the variables are linearly related. Correlation does not imply cause.	Note: There are 3 reasons for correlations: A can cause B, B can cause A, or A and B are independently related to another variable, C.
Courage	Operational usage: The absence of fearful behavior towards real or imagined danger; such as the ability to rebound from unnerving situations.	
Cremains	Cremated human remains.	
Crittering (also see Distractability)	Operational usage / colloquial: A change in the dog's behavior where the dog becomes distracted by animal odor or some other animal distracter. Crittering is usually evident as there is a change in body language (head and tail position).	
Decision Making	Operational usage: The handler's ability to recognize the dog's reactions and then translate and communicate to other officers whether or not the detector dog alerted to the presence of a trained odor.	Note: See "Alert " re: the ability to distinguish and a more specific definition
Defense / defensive behavior	Operational usage: Behavior exhibited by the dogs to protect him- or herself and, or their handler when faced with a perceived or real threat.	
Delay of reinforcement	The interval between the performance of a behavior and the delivery of reinforcement.	
Dependent variable	Scientific usage: In the most simple experiment this is the item whose response you measure.	
Deployment	Operational usage: After initial assessment of the search environment, the handler conducts an efficient, effective and thorough search.	
Deployment Log /	A record of the use of a trained dog	

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Record or Utilization Log / Record	team in an operational environment, as opposed to training records.	
Detector/Detection Dog	Operational usage: A dog trained to detect and alert / respond / indicate to the presence of certain scents / odors for which it has been trained.	
Differential reinforcement of incompatible behavior (DRI)	A technique used in behavior therapy and training designed to reduce the frequency of a target behavior by reinforcing a specific behavior that is incompatible with a target behavior. DRI combines extinction of the target behavior with reinforcement for performing a specific behavior that is incompatible with the target behavior.	Ex. A dog cannot stand up and sit down at the same time and it has to choose, the correct action is rewarded. For example, if a dog runs after cats, you train the dog to sit whenever it sees a cat. It is impossible for a sitting dog to run.
Differential reinforcement of other behavior (DRO)	A technique used in behavior therapy and training designed to reduce the frequency of a target behavior by giving the subject reinforcement as long as the target behavior does not occur. If the target behavior occurs, the reinforcement is stopped. Actually, DRO is a combination of extinction of the target behavior while providing the subject with reinforcement for doing anything else.	Ex. The dog is rewarded for anything other than the undesirable behavior. A dog that jumps up is rewarded for anything other than jumping up (sitting, walking, standing, etc.)
Diploid	Scientific usage: A cell or organism with twice the haploid # (2N) of chromosomes - produced by mating (N = haploid # of chromosomes).	
Disaster Search Dog	Operational usage: A dog trained to locate or indicate live victims or human remains of accidents or disasters.	
Discriminative Stimulus	Scientific usage: A stimulus that signals when a particular response produces specific consequences. For example, sitting in the presence of a particular odor leads to a reward. The odor in this case is the discriminative stimulus.	

Displacement behavior	A behavior that is exhibited when the individual does not have access to a goal or to solving the problem; the behaviors exhibited may become common ones for that individual to exhibit when in such a circumstance but may not have anything to do with the behaviors that would be used to solve the problem.	Example: The dog cannot get to the bone that is outside his run, so he runs in circles. Displacement behavior is not to be confused with redirected behavior when the target of the behavior becomes unavailable either through absence, restraint, or prohibition, and the individual exhibits the behavior that would have occurred to another – but out of context – individual. Example: You yell at the dog for chasing the cat, so the dog chases the child instead of the cat. Redirected behaviors are replacement 'in kind' using similar behaviors; displacement behaviors are not 'in kind' behaviors and have nothing to do with the original goal and action.
Distemper	Scientific usage: A highly contagious viral disease of canids, including domestic dogs, that is caused by a paramyxovirus genus *Morbillivirus*) and is marked by fever, leukopenia, and respiratory, gastrointestinal, and neurological symptoms, especially in young dogs. In older dogs symptomology may be less severe, but neurological impairment is always common.	Note: Routine vaccine protocols include a vaccination against distemper.
Distractibility	Operational usage: The tendency to be easily diverted from task.	
DNA-deoxyribonucleic acid	Scientific usage: The building structure of heritable material which is formed into a code. The code has only 4 components, called base pairs. The 4 DNA base pairs are: adenine, guanine, thymine, and cytosine. It's the order of these codes that specifies which proteins are made in	

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	conjunction with RNA (ribonucleic acid), which help read the code and follow its instructions within the cell. The material that makes the heritable genetic code. This is the material that provides the instructions for the cell.	
Dog	Scientific usage: A domestic canid (*Canis familiaris*) used in various work or companionship tasks.	Note: Although the most recent common ancestor to dogs is wolves, it is important to remember that there were multiple speciation events over the past 135,000 years that lead to the dog as a separate species.
Dog Handler	Operational usage: The trained person who works the dog.	
Double blind	Scientific usage: This condition occurs when neither the experimenter/handler, nor the observer/evaluator, knows which treatments were given to which subjects. Operational usage: See SC2 document. In the evaluation of a dog neither the assessor nor the handler knows the location of the substance if present.	This means that neither party knows what outcome is expected. This is the most powerful of the designs to remove bias on both sides, but it requires careful thought and a coded design.
Drive	Scientific usage / concerns: There are problems with this definition in both the behavioral and genetics communities, see Notes. Operational usage: Drive is the propensity of a dog to exhibit a particular pattern of behaviors when faced with particular stimuli. Drives are triggered by these particular stimuli and expressed in a typical and predictable way that is associated with the particular stimulus. Drives can be enhanced or diminished through experience (e.g., training, environment, et cetera), but they cannot be created or eliminated.	Note: There are problems with this definition in both the behavioral and genetics communities because we cannot measure or even accurately define one of the key parts of the operational definition: "instinctual"/ "instinctive". Also, if dogs can be considered "low drive" the response cannot be exaggerated, and the ability to enhance or diminish a response is a key part of the operational definition of drive. Finally, while you may easily compare 2 dogs in front of you where one has relatively

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	Traditionally defined in the working dog literature as an exaggerated, instinctual response to certain stimuli and situations. Drive is most narrowly and clearly defined as a willingness, vigor, or enthusiasm to engage in certain behavior, contexts, or situations.	"higher drive" than the other, this type of relativistic comparison cannot be quantitatively tested and validated within or between observers, and does not provide a phenotype that can be used in genetic analyses, or behavioral tests to improve technique.
Emergency stop	Operational usage: A situation where the handler instructs a dog to stop its movement.	FEMA term
Environmental Enrichment	The process of improving the mental and physical welfare of animals by providing behavioral choices through enhancements to their environment. Techniques can include introduction of new stimuli (e.g., food, toys), operant contingencies, social partners or training sessions. Behavioral enrichment is intended, in part, to reduce the frequency of problematic behaviors, including stereotypical ones. It is important to ascertain that this type of intervention is functioning as intended by testing it to see if there is a change in the intended direction of the behaviors in question (e.g., the dog sits and stares at the kennel door all day before the intervention; with a kennel-mate he stares at the door less and grooms his kennel-mate and is groomed by him).	Also referred to as Behavioral enrichment.
Environmental Training/Testing:	Operational usage: Instruction and evaluation procedures used to teach a dog to work, and determine whether a dog can work, in a variety of operational environments with increasing biological and physical complexity, which may distract or inhibit the dog from work. The training and testing, respectively, are designed to teach the dog to work,	

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	and assure that the dog can work, in a variety of operational environments, some of which may be extreme.	
Escape Learning	A conditioning technique in which the subject learns to escape or terminate an unpleasant stimulus.	
Escape or Escape Behavior	The relationship between a performance and an aversive stimulus in which the performance terminates the aversive stimulus.	
Evaluator	An individual with relevant training and experience in the discipline being evaluated, who assesses the performance of canine, handler, or team while showing no bias or partiality. See Certifying Official.	Note for SC2: The outstanding question is whether an evaluator is held to specific and defined standards. The sub-disciplines need to decide what is relevant and what qualifications are needed. SC2 should list general qualifications (ethics, sources of evaluators and the need to avoid potential biases, et cetera) and the individual sub-disciplines need to list the specific technical concerns. One of the concerns is who gets to "license" the handlers and evaluators. In some cases the evaluators may be determined by the initiating authority. This issue needs to be addressed by the sub-disciplines.
Evidence Search Dog	Operational usage: A dog trained to locate and indicate items in question by means of detecting human scent.	
Examination	A physical, written or oral test.	
Experimental bias	Scientific usage: Anyone testing any idea has a strong expectation about the outcome, and an interest in not being mistaken. This is the *experimental bias.* The only way to control for this is by ensuring the person making the measurements does not know what treatment each subject received until the experiment is completed.	

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Extinction Burst	A short period of an increase in the occurrence of a previously reinforced response that is brought about by the withdrawal of reinforcement.	
Extinction Training	A procedure where the reinforcement of a previously reinforced behavior is discontinued with the intention to reduce the occurrence of that behavior.	
Fading	A term used to describe a procedure for gradually changing a stimulus controlling an individual's performance to another stimulus. The gradual removal of reinforcement, as in the progressive reduction of a reinforcement schedule.	
False negative	Operational usage: A response indicating that something is not true or not present when it is true or present. See miss. Scientific usage: Type II error.	
False positive	Operational usage: A response indicating that something is true or present when it is not. See false response. Scientific usage: Type I error.	
False response	Operational usage: In a controlled environment, the dog responds as if a trained substance was present when it is known that it is not. This is false response and a false positive.	
Fear	Scientific usage: A behavioral response involving the autonomic nervous system (e.g., "fight or flight") in the presence of real or imagined danger involving avoidance and, or withdrawal under circumstances where the dog is distressed.	
Final Response	Operational usage: A behavior that a dog has been trained to exhibit in the presence of a target odor source. This	An absence of a final response does not necessarily negate any behavioral responses given

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	behavior may be either passive (sit, stare, down, point, etc.) or active (bite, bark, scratch, etc.).	earlier in the alert sequence. Therefore, absence of a final response does not mean a target odor is not present. See specific SC documents and definitions for what is an acceptable response given the relevant operational needs. See Alert.
Firearm Detection Dog	Operational usage: A dog that is specifically trained to locate and respond to the presence of firearms by associated odor.	
Gene	Scientific usage: A gene is the unit of inheritance. This term is now commonly used to represent a unique sequence of genetic information associated with a heritable trait.	Example: The genes that we now know are associated with an increased risk for hip dysplasia are found on multiple chromosomes. This means that they may not be inherited together. Most genes are not expressed in an obvious manner. For example, you cannot identify either the genes involved in olfaction or their actual roles by looking at the dog.
Generalization	The tendency to respond to a class of stimuli that share some common characteristics (e.g, the presence of some compound) and that may vary across some other dimension (e.g., a concentration gradient) rather than only to the one which was originally conditioned.	This has also been called the failure of discrimination.
Green Dog / Novice Dog	Operational usage: Ranges from an untrained dog up to but not including a titled dog.	
Habit	A recurrent pattern of behavior acquired through experience and made more or less permanent by various reinforcing events.	
Habituation	The lessening or disappearance of a response that was once elicited by the	

	stimulus with repeated presentation of the same or closely related stimulus.	
Handler error	Any action or cue that causes the canine or dog team to perform incorrectly	
Haploid	Scientific usage: A cell like a sperm cell or egg that contain the haploid # (1N) of chromosomes; each chromosome is ½ of each parental pair of homologous chromosomes; when brought together via fertilization a complete set of chromosome pairs is generated. Operational usage: A cell like a sperm or egg that contains one half of total number of chromosomes that are in each body cell is called a haploid (abbreviated 1N).	Note: This pattern allows mating to produce offspring that have 1 set of chromosomes from mom and one from dad.
Hardness / Confidence / Boldness	Operational usage: A mental and/or physical resiliency to unpleasant experiences. Hard dogs are highly "recoverable".	Note: This does not mean that the dog requires harsh or physical corrections.
Headspace of target substance	Operational usage: The vapor surrounding a target substance.	
Heel position, at	A position where the dog is trained to move with the handler, facing in the same direction as the handler. There is a more restrictive definition of "heel" in competitive obedience. It's at the handler's discretion exactly where to position the dog and in a certification the handler tells the evaluator the position to which the dog has been trained.	
Heterozygote	Scientific usage: A situation where alleles are different at the 2 loci on homologous chromosomes (the contribution from each parent was different).	Note: Whether a dog is heterozygous or homozygous for a trait becomes important if that trait is heritable and either highly desirable or highly undesirable. For some heritable disease states, a dog that is heterozygous may not

		be affected, but a homozygous dog is affected. This is extremely important for anyone involved in breeding or interested in risk of heritable of disease.
Homemade Explosives (HME)	A combination of commercially available ingredients combined to create an explosive substance.	
Homozygote	Scientific usage: A situation where alleles are the same at the 2 loci on homologous chromosomes (the contribution from each parent was the same). A homozygote is the condition where alleles are the same at the same location on each chromosome in the pair. See "*Note*" for heterozygote.	
Human Detection Dog	Operational usage: A dog trained to detect and locate live human beings.	
Husbandry	Operational usage: The daily care, feeding, exercise, and meeting of the behavioral / mental / "emotional" needs of the dog.	
Immediacy of Consequences (Reinforcement / Punishment)	The timing involved in delivering consequences for a response directly following the response in time. This reduces the likelihood of inadvertently reinforcing/punishing some other behavior.	Research has repeatedly shown that consequences have their greatest effect on behavior they most closely follow. This is especially true for consequences in the context of dog training procedures.
Imprinting	A phenomenon by which an animal during a formative stage of life forms a lasting attachment to, and preference for, some object or activity through exposure to the same independent of consequences.	Often used by trainers to describe initial target odor discrimination training however, this is not the scientific definition of imprinting. This operational definition describes a form of early associational training.
Improvised Explosive Device (IED)	A device placed or fabricated in an improvised manner incorporating destructive, lethal, noxious, pyrotechnic, or incendiary chemicals and designed to destroy, incapacitate,	

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	harass, or distract. It may incorporate military stores, but is normally devised from nonmilitary components.	
Inadvertent reinforcement	Reinforcement delivered despite the appropriateness of any response on the part of the subject.	*Inadvertent reinforcement / reward* is a much more common phenomenon with pet dogs. If clients are growled at they often try to 'bribe' the dog to stop growling with a treat. The dog learns to use the growl to get the treat. This is a classic example of inadvertently rewarding the wrong behavior, not of accidental reinforcement.
Independence	Operational usage: The dog's capability to perform without assistance or being influenced by the handler.	
Independent / independence	Scientific usage: Statistical studies assume a property called independence - a situation where the data collected are not related to each other because they come from a random sample from the population examined; independence is often assumed but seldom tested. Good statistical testing tests for independence when its presence is unclear.	Note: You may want to know if your detection dog's performance is affected by environmental temperature. You can test for this using statistics. If there is an association between performance and temperature (e.g., the hotter the temperature the worse the dog's performance) these are not independent. If there is no association between temperature and performance these are independent, and you need not consider temperature in any of your performance evaluations.
Independent variable	Scientific usage: In the most simple experiment this is the item that you vary or that varies as a function of the way the experiment is designed.	Note: Operational Application: If you want to know if age of the trail affects how long it takes the dog to follow a 300 m trail, your independent variable is the age of the trail. Independent variables can also

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		include temperature, humidity, wind strength and direction, et cetera.
Indication	Operational usage: The dog's response to the odor in the manner in which it has been trained, independently and without distraction.	
Instinct	Operational usage: The innate tendency to react in specific ways in specific circumstances. Behaviors that are not taught, and are stereotypical in action and similar in all members of a species. Instinctual behaviors are provoked by relatively simple stimuli.	
Interest	Operational usage: Any reaction to an odor which may include: 1. A noticeable, readable, physical change in behavior in a detector dog during the search when the dog reacts to (i.e., is interested in) an odor. 2. Pattern of behavior following the dog's initial reaction to a trained odor when the dog displays enthusiasm and desire to remain and trace the trained odor to its source.	See Alert.
Inter-observer reliability	Scientific usage: The extent to which different observers obtain the same results when measuring the same behavior; this is often also called *repeatability;* this can be a function of the humans, but it is more a function of the scoring system.	Note on Operational Application: Many handlers evaluate dogs on a scale of 1-5. If you wish your test to be repeatable and you have multiple handlers it is essential that everyone agrees on what a 4 is, compared with a 3 or 5.
Intra-observer reliability	Scientific usage: see Reliability / consistency.	
Kennel Assistant	Operational usage: The trained person who undertakes husbandry duties in the absence of the handler.	
Locus (plural loci)	Scientific usage: The position of a gene on a chromosome; alleles (or	

	forms of the gene) occupy the same locus on each of the homologous chromosomes.	
Maintenance Training	Operational usage: Continuing training conducted beyond the initial training of a discipline, designed to maintain a level of proficiency by ensuring the team's capability to perform desired tasks.	
Methodology	The particular training practices and operational tactics that are implemented.	
Miss	Certification/Training use: When the dog fails to alert in the known presence of the target odor; a situation in which the dog fails to exhibit the trained behaviors in the presence of the target odor on which he or she was trained.	Also referred to as a "false negative" or "non-alert".
Multi Purpose Dog	Operational usage: A dog trained in more than one discipline. i.e., patrol/narcotic or patrol/explosive	
Non-indication	Operational usage: A "miss" by the dog in the known presence of the substance that is there; a situation in which the dog fails to exhibit the trained behaviors in the presence of the substance on which he or she was trained.	
Non-productive response	Operational usage: A change of behavior followed by a positive indication which can't be confirmed by the handler. This may be the result of residual odor that the dog can detect but which cannot be confirmed by technology or direct observation. A non-productive response may also be an error – a false positive - but these outcomes cannot be distinguished in an operational environment.	In a certification procedure you will know whether you have a false positive. You cannot know whether you have a false positive in most operational situations.
Null hypothesis	Scientific usage: The beginning assumption in any experiment or test is that there is no effect of the procedure; this is the hypothesis	

	against which you test your idea.	
Odor	Operational usage: The chemical mixture of volatile compounds that stimulates the olfactory neurons.	
Off-lead	Operational usage: Any work or interactions with the dog where the dog is not attached to a lead.	
On-lead	Operational usage: Any work or interactions with the dog where the dog is attached to a lead.	
Operant Conditioning	Scientific usage: When used in training, operant conditioning involves teaching an animal to perform a response in order to obtain a reward. Operant conditioning links two behaviors (chaining) that might not have been previously linked by using the concept that when you are reinforced or rewarded for a behavior you will offer that behavior again. Also known as instrumental conditioning.	Example: A voluntary response such as sitting is more likely to be repeated if the end result is pleasurable - thus the outcome determines the response.
Passive Response	Operational usage: A type of response that the dog displays/ indicates in a manner that doesn't disturb the environment (i.e., sit, stand, or lie quietly after the detector dog has detected a trained odor).	
Pedigree	Scientific usage: A record of all of the dog's direct ancestors, or genealogy, in sequence for 3+ generations. Pedigrees can be forward reading or backward reading.	
Personal Protective Equipment	Operational usage: Equipment used for health and safety purposes.	
Physical Fitness	Cardiovascular and musculoskeletal conditioning of the dog or handler for the work undertaken.	
Positive Punishment	Scientific usage: Application of a stimulus that **decreases** the probability of the preceding response occurring again. It is applied as the behavior is occurring or immediately	Example: yelling at the dog or smacking would be considered a punishment if it lead to a decrease in the behavior.

	after the behavior has already occurred. Positive punishment is the addition of an aversive stimulus or event.	To be most effective the reprimand needs to be: 1. Immediate, 2. Consistent, 3. Sufficiently aversive, but no more so than is needed (or you can inadvertently reinforce fear).
Positive Reinforcement	Scientific usage: A pleasurable reward given immediately after a response or as the response occurs that **increases** the probability of a behavioral response. For example if a dog is rewarded for sitting by being given a treat the dog is more likely to sit again. To be most effective the reward has to be: 1. Immediate, 2. Consistent, 3. Desirable.	
Possession	Operational usage: Upon presentation of the reward article, the dog takes the article without hesitation, and maintains a firm grip.	
Post-pubescent dog	Scientific usage: A sexually mature dog. Male dogs are generally sexually mature by 6-9 months, and females by 8-10 months. Physical growth still continues in the post-pubescent dog	
Power of a test	Scientific usage: This is the probability of rejecting a null hypothesis when it is false; the probability of finding a true effect.	Note: Power is calculated by 1-$\exists$ where $\exists$ is the probability that you accept a hypothesis of no effect when it is false. When $\exists$ - the probability of missing the effect - is tiny, the power of the test is huge. Almost everyone evaluates $\forall$, but few people evaluate $\exists$. Yet the greater the power of a test the more likely that the effect will be detected. Generally, the larger the sample size (n), the smaller the $\exists$, the higher the power of the test. Statistical power can also be increased by an improved, more discrete,

		cleaner, et cetera research design.
Precision	Scientific usage: A measure of how free the measured value is of random errors; precise measures need not be accurate....your computer may have a very precise clock, but if you don't change it for daylight savings time it's still inaccurate (wrong) for some times of the year; measurements are precise if they lack *random* errors (accurate measures lack *systematic* errors).	
Productive response	Operational usage: A change of behavior followed by a positive indication which can be confirmed by the handler.	
Prospective study	Scientific usage: A study that identifies all the individuals who had a particular experience and follows them through time to see what happens as a result of that experience.	Note: The drawback here is that this takes a long time; retrospective studies generally provide hypotheses of mechanism or cause that can be tested in prospective studies.
Protection	Operational usage: Behaviors associated with defense of self and / or other group members including humans when threatened or when a potential threat is perceived.	
Punishment	Scientific usage: A procedure that is used to decrease the strength of a response by presenting an aversive stimulus after the response occurs.	Note: Punishment is most likely to be successful if it applied 100% of the time the undesirable behavior occurs, if it is applied immediately after the behavior occurs, and if it is sufficiently aversive.
Rabies	Scientific usage: A viral disease of the nervous system of warm-blooded animals that is caused by a rhabdovirus and is communicable from animal to humans primarily through salivary transmission. There are also reports of contagion through aerosolized secretions. Almost without exception, this disease is fatal	Note: Dogs, some non-domestic carnivores, and some humans who work with dogs are routinely, and should be vaccinated against rabies. The vaccine is viewed as universally protective.

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	once the animal begins to show signs.	
Random / randomized	Scientific usage: When the choice of something or the placement of something is random the substance placed is equally likely to be either substance.	
Recall	The dog's response to return to the handler on command.	
Reinforcement	Scientific usage: This refers to any event that increases the probability of a response. Reinforcement can be positive or negative.	
Reliability	Operational use: Low probability of alerting to anything other than a target odor and a high probability of alerting to a target odor. Legal Usage: Evidence that establishes a fair probability that a target odor is present. Scientific usage: The extent to which a measurement is repeatable and consistent and free from random errors; all measurements have random components because of imperfections in the measurement process, and the fact that when we measure something we usually change it a bit. Reliability is determined by precision, sensitivity, resolution, and consistency. It is the extent to which similar results are obtained when measuring the same behavior on different occasions. Engineering and technical definition: Mean time to failure of equipment. (MTTF)	Note: This term is often used in science when assessing how well an observer has measured behaviors. There are 2 categories of observer reliability: 1) *intra-observer reliability* (or observer consistency) - how consistent the observer is at evaluating the same behavior at different times or in similar dogs. 2) *inter-observer reliability* - how consistent different observers are when evaluating the same dog.
Repeatability	Scientific usage: See inter-observer reliability.	
Replication	Scientific usage: Repetition of the experiment by others, or in other circumstances, that obtains the same results.	Note: It's important to realize that findings can still be myth unless someone else can repeat the experiment and obtain the

		same results.
Rescue Search Dog / Search and rescue (SAR) dog	Operational usage: A dog trained to locate or indicate live victims of accidents or disasters.	
Residual Odor	Operational usage: Odor that remains from training aids or actual objects of focus once the aids or objects have been removed.	
Resolution	Scientific usage: The smallest change in the true value that can be detected.	Note: If you are using a scale with a lowest measure of a kg, it is not going to have a very good resolution for something weighing 3 grams.
Response / Indication	Operational usage: A behavior that a dog has been trained to exhibit upon locating the source of a target odor. This behavior may be either passive (sit, stare, down, point) or active (bite, bark, scratch).	There are non-indications (where the dog does not give the trained response) and non-productive responses (where the dog gives the response but the presence of the material cannot be confirmed by man or machine).
Retrieve	Operational usage: Behaviors associated with finding and returning prey or objects back to the handler or social group.	
Retrospective study	Scientific usage: A study that examines patterns in all individuals with available data from the past.	Note: The drawback here is that you may not be able to find data for all the questions or associations in which you are interested because these data were not collected. Here, any controls must be statistical rather than experimental. For example, a model simulation is often used as a control.
Reward	Operational usage: The presentation of an article, toy, or praise given to the dog once the detector dog has alerted and responded to the odor(s) for which the dog is trained to detect. CF reinforcement	
Runaway	Operational usage: An exercise in which the target visually stimulates the dog by running away from the dog, inciting a chase.	

Scent article	Operational usage: Also known as **scent object** or **scent pad**. The scent article refers to an object containing the odor to be detected.	Note: In human detection this is the odor that is used to start (or "scent") the dog. In human scent work, the scent article may contain multiple human odors; this does not make the article unusable if proper protocols are followed.
Scent association	Operational usage: When a dog learns to identify a trained odor with a specific reward.	
Scent cone	Scientific usage: The path of dispersion that the odor follows in the given wind or air currents, and in a given thermal environment.	
Scent discrimination	Operational usage: A dog's olfactory ability to distinguish between various odors.	
Scent picture	Operational usage: The combination of odors that is present when a detector dog responds to a trained odor.	
Search Intent	Operation usage: The interest, attitude, and enthusiasm the dog shows while searching.	
Sense of smell	Scientific usage: The ability to perceive odor or scent using olfactory neurons. Detection of odor relies on the olfactory neurons. Processing of the olfactory information obtained from the neurons occurs in the frontal cortex of the brain.	
Sensitivity	Scientific usage: A measure of how much small changes in the true value lead to changes in the measured value; this term is commonly used in diagnostic tests.	Note: Sensitive tests detect even very low levels of infection; sensitivity is a measure of what you could miss; the ideal diagnostic test has both high *specificity* and *sensitivity*; temperament evaluations using predictive values could use the same terminology.
Sensory Threshold	Operational usage: A character trait which describes the amount of stimuli which is necessary to elicit a	

	response from the dog.	
Sexual maturity	Scientific usage: An animal is said to be sexually mature when male dogs produce viable sperm and female dogs (intact female dog = bitch) undergo estrus cycles; only sexually mature dogs can reproduce.	
Sharpness	Operational usage: A character trait which is the tendency to react to stimuli with aggressive behavior.	
SI units	Scientific usage: Système International d'Unités - This is the international system of measurement. It uses meters, kilograms, et cetera and has a standardized set of abbreviations.	Note: If you wish to publish, you will have to use this system, not one involving feet and pounds.
Single Blind Testing	Operational usage: An evaluation of the canine / handler team's ability to complete an exercise where the evaluator knows the outcome and the hander does not.	
Sociability with humans	Operational usage: The dog's age and situational appropriate comfort level and interaction with people.	
Sociability with other dogs	Operational usage: The dog's age and situational appropriate comfort and interaction with other dogs.	
Social maturity	Scientific usage: The period of behavioral maturation that appears to be correlated, in species in which it has been studied, with changes in brain chemistry. Dogs' "temperaments" can be considered relatively stable after this period, although learning continues. The broad range cited for social maturity is 12-36 months, and the narrow range cited is 18-24 months.	Note: Patterns of behaviors become consistent only after the dog undergoes social maturity, hence the finding that dogs can consistently pass or fail evaluations associated with task-specific performance only after this stage. The range of social maturity is considerable, but the neurochemical changes remain unmeasured. We do not know the exact ages that map on to specific changes in patterns of brain chemistry.
Softness	Operational usage: A character trait which is a mental and/or physical sensitivity to unpleasant experiences.	

Species Preservation	Operational usage: The genetically based blueprint for behaviors which deal with the past, present and future life of the canine species.	
Specificity	Scientific usage: The extent to which the measure describes what it is intended to describe and nothing else; this term is commonly used in diagnostic tests....specific tests detect ONLY that disease, not all diseases that cause a similar reaction; the ideal diagnostic test has both high *specificity* and *sensitivity*.	Note: Temperament evaluations using predictive values could use the same terminology.
Statistical significance	Scientific usage: The level of statistical significance is the probability of obtaining the observed result – or a more exaggerated one - if the null hypothesis of no effect was true. The statistical significance is usually represented as alpha / $\forall$. This is really the probability the result was due to chance alone and that there was no effect of whatever you did. The arbitrary level at which $\forall$ is usually set is 0.05. This means that there are 5 chances in 100 that the pattern you have established is due to chance, alone.	Note: Something is either significant or it is not. Statisticians are driven crazy by people who say their result "approaches significance". More robust tests do not assume a level of significance and tell you what the likelihood that you are wrong actually is.
Subordinate	Operational usage: A lower ranking member of the canine social group.	
Survival	Operational usage: Behaviors associated with avoiding, negotiating, or overcoming dangers.	
Systematic Search Pattern	Operational usage: A method which employs a specific search sequence to increase accuracy and minimize omissions, while maximizing coverage. Such patterns usually have set start and stop points.	
Target odor	Operational usage: Odors which detector dogs are trained to detect.	
Temperament	Operational usage: The general consistence with which the animal behaves. Broad classes of temperament appear to be heritable.	Note: New molecular techniques should flesh out this definition in the next decade.

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Threshold	Operational usage: The working threshold for a dog may be defined by its training history and this may include a minimum and maximum amount to which a dog may respond. Scientific usage: The lowest concentration of a chemical vapor that a dog can be trained to detect. In animal psychophysics this has traditionally been defined as the point at which the animal detects a stimulus above the level of chance.	
Titration	Operational usage: This is an operational, not a scientific, definition, please see notes. 1. A gradient of correction needed to control a dog's behavior. 2. The range of scaled correction or reward, going from lowest to highest, which will achieve the desired response from the dog.	Note: There is a scientific definition of this term that differs considerably from what is discussed here.
Track / Trail	The odor pathway left by a target.	
Tracking (Human)	The propensity or learned ability of a dog to methodically follow odor on the ground (human/ground disturbance) by working the dog close to the pathway.	Dogs are not typically pre-scented on an object.
Tracking Line	Operational usage: A length of cord attached to the harness and held loosely by the handler, allowing the handler to follow and, or control the dog, if needed.	
Tracking/Trailing Harness	Operational usage: An arrangement of straps fitted around the dog's body, leaving the head and neck free, allowing attachment of a line that permits the handler to follow and, or control the dog while tracking or trailing.	
Trailing (Human)	The propensity or learned ability of a dog to either follow ground disturbance odor and/or target odor plumes. The dog will use whichever technique will get them to the target odor the most efficiently.	Dogs are typically pre-scented on an object.

Trainability	Operational usage: A character trait which is psychological, yet the manifestation of trainability is physical. It is observed in two manifestations: (1) Spontaneous attempts to perform the will of the pack leader (handler), and (2) volume of behaviors, which can be learned.	
Trainer/Instructor	Operational usage: Any member of a specific discipline who is in a situation of instructing any part of the canine / handler team.	
Training Log	A record used to document the training of a dog, handler or dog team.	
Type I error	Scientific usage: This is the mistake you make when you reject the null hypothesis (you say there is an effect) and it is true (there is really NO effect). This is also called a false positive - detecting an effect where none exist.	Example: You are tested for Lyme disease using the first-pass diagnostic assay. It is positive and so you are treated for joint pain. Unfortunately, the pain is due to a ligament tear which is apparent as you fail to improve. Further testing reveals no Lyme organisms. The first pass test was subject to Type I error.
Type II error	Scientific usage: This is the mistake you make when you accept the null hypothesis (there is no effect) when it is false (there really IS an effect). This is also called a false negative - failure to detect a real effect.	Example: You are tested for Lyme disease using the first-pass diagnostic assay. It is negative. Further testing reveals the Lyme organism. The first pass test was subject to Type II error.
Unconditioned Response	Scientific usage: See classical conditioning.	
Unconditioned Stimulus	Scientific usage: See classical conditioning. A stimulus that produces a response without previous experience or training.	
Unconfirmed Alert	Operational usage: An alert for which the presence of a trained odor cannot be confirmed. This may be the result of residual or lingering odor that the dog can detect but which has not been confirmed by technology or direct observation.	Also referred to as an "unconfirmed hit and/or unconfirmed find".

In a certification procedure you should know whether you have a false positive. You may |

		not know whether you have a false positive in most operational situations.
		An unconfirmed alert may also be an error – a false positive - but these outcomes cannot be distinguished in an operational environment. False positives can often be ruled out by interview or investigation.
		Technology is reaching a state of maturity that may corroborate confirmed or unconfirmed alerts. This technology may also validate a non-productive response.
Vaccine	Scientific usage: A preparation of live, modified-live, killed micro-organisms, or the relevant subunit, that is administered to produce or artificially increase immunity to a particular disease.	Note: Vaccines can be administered IM (intramuscularly), SC (subcutaneously), orally, or IN (intra-nasally).
Validity	Scientific usage: The extent to which a measurement actually measures what you want to measure, and, in doing so, provides information relevant to the questions asked; valid measures provide a good, close relationship between a variable. Validity has 2 aspects: accuracy and specificity.	Example: (e.g., a measure of behavior) and that which the measure is intended to predict about the world.
Variable	Scientific usage: An identifiable facet (e.g., size, outcome of a test, et cetera) that can be measured.	
Voice Inflection	Operational usage: Correct use of the voice employing tone, pitch and volume appropriately to the situation as required.	
Zoonosis	Scientific usage: Diseases communicable from animals to humans.	

Appendix 2 – General Guidelines

SWGDOG SC2 - GENERAL GUIDELINES
Posted for public comment 12/16/06 – 2/16/06. Approved by the membership
4/2/2006

Statement of Purpose: To provide recommended general guidelines for training, certification, and documentation pertaining to all canine disciplines. (Discipline specific guidelines are found within the corresponding subcommittee documents.)

INITIAL TRAINING

1. The canine shall be trained by a competent individual or entity through a structured curriculum with specific training and learning objectives.

2. The handler shall be trained by a competent individual or entity through a structured curriculum with specific training and learning objectives.

3. The canine/handler team's training shall be continued to achieve a level of operational proficiency until certification evaluation.

4. The training shall be structured to meet the typical mission requirements of the canine/handler team's department/organization.

CANINE/HANDLER TEAM CERTIFICATION

1. Certification for the named canine/handler team shall be valid for one year.
    1.1. Certification does not relieve the canine/handler team from regular maintenance training and following other recommended SWGDOG guidelines.

2. The certifying officials shall *not* be routinely involved in the day to day training of the canine/handler team being tested.

3. The canine/handler team shall achieve at least 90% proficiency for successful certification, unless otherwise dictated by the specific discipline.

4. A mission oriented test environment shall be used.

5. Certification shall consist of a number of assessments that together form the full test.
    5.1. Each assessment is the evaluation of a search.
    5.2. Aids/targets to be used in the certification process shall not have been used in the day to day training activities of the team being certified.

6. The certification shall include at least two of the following types of assessments:

    6.1. Odor recognition assessment
        6.1.1. The handler shall be advised of the parameters of the search.
        6.1.2. The handler shall know the number of target objects, but not placement.
        6.1.3. The evaluating official shall know the desired outcome of the search.

    6.2. Comprehensive assessment
        6.2.1. The handler shall be advised of the parameters of the search, yet shall not know the desired outcome.
        6.2.2. The handler shall not know the number or placement of the target objects.
        6.2.3. The evaluating official shall know the desired outcome of the search.
        6.2.4. The assessments shall include a negative search.

    6.3. Double-blind assessment
        6.3.1. No participant or observer present at the assessment location(s) shall be aware of the parameters of the search.
        6.3.2. The assessments shall include a negative search.

7. Each assessment will address the following areas:
    7.1. Systematic Search Pattern.
    7.2. Handler shall demonstrate control of the canine and the ability to complete a systematic search.

    7.3. Animal Response Interpretation.
        7.3.1. Handler shall accurately interpret the canine's change in behavior.

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    7.3.2. Handler shall indicate when the canine has made a final response.

  7.4. Final Response Interpretation.
    7.4.1. The canine/handler team shall locate the source of the target odor or interpret the absence of the target odor.

8. A canine/handler team which fails to complete the certification process shall complete a corrective action plan before making another attempt to certify.

9.   Any competent individual or entity may enhance the recommended SWGDOG guidelines in order to make the requirements more stringent.

MAINTENANCE TRAINING

1. The canine/handler team shall conduct regular objective-oriented training sufficient to maintain operational proficiency.
    1.1.   Training is meant to improve and enhance the performance of the handler, canine and the canine/handler team. In training, situations are purposely sought where mistakes are made because learning is a process of trial and error.

PROFICIENCY ASSESSMENT

1. The canine/handler team shall perform periodic proficiency assessments as outlined in section 6 of the Canine Handler Team Certification, including odor recognition assessment, comprehensive assessment, and double-blind assessment.

DOCUMENTATION

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1. The handler/department/organization shall maintain training, proficiency assessment, seizure, and/or deployment/utilization records.
    1.1. Records shall contain discipline-related specifics.
    1.2. Records shall be standardized within the department/organization.
    1.3. Deployment/utilization/seizure information shall be separated from training and testing information.
    1.4. Supervisory review is recommended.
    1.5. Digital format is recommended to facilitate compiling and analyzing data.

2. Reliability of the canine/handler team shall be based upon the results of certification and proficiency assessments.
    2.1. Training records do not necessarily reflect reliability.
    2.2. Training records are necessary to illustrate the type and amount of training that the team has experienced before and after certification.
    2.3. Confirmed operational outcomes can be used to determine capability.
    2.4. Unconfirmed operational outcomes shall not be used to determine capability in that they do not correctly evaluate a canine/handler team's performance (i.e. residual odor can be present or concealment may preclude discovery).

3. Training Aid Records
    3.1. Training aids shall be clearly labeled in a manner to support accountability.
    3.2. Appropriate records shall be maintained by the handler/department/organization.

4. Each animal shall undergo an annual veterinary examination.
    4.1. Medical records shall be maintained in a manner such as they are accessible to the handler/department/organization.

SWGDOG SC 3 – SELECTION OF SERVICEABLE DOGS

Posted for public comment 4/22/06 – 6/22/06. Approved by membership 10/2/2006.

APTITUDE AND TEMPERAMENT

1.   **Evaluating potential detector dogs**
When submitting a dog for evaluation, the supplier could provide the documentation in paragraph 1.4 below to allow the evaluator to carry out a basic assessment of the medical history. It is normal for a full veterinarian test to be carried out on completion of a successful evaluation.

   1.1   Due to the importance of the initial selection evaluations, they should only be carried out by a competent evaluator.

   1.2   It is considered a best practice to conduct business with suppliers equitably, fairly and according to appropriate legal and contractual agreements.

   1.3   During evaluation it is considered a best practice to care for all dogs in the same manner as privately-owned dogs.

   1.4   Before carrying out a temperament and evaluation test, the dog's basic medical condition and physical health could be assessed to eliminate those animals which are fundamentally unsuitable for the task. This assessment should include hip and elbow x-rays and current vaccination records. Acceptance of a dog should normally be on a 30 day return policy from arrival at the training center.

2.   **Definition**
   2.1   A potential detector dog is one that is untrained on any specific odor and the evaluation is designed to establish that the dog has the essential behaviors and temperament to be a successful detection dog.

3.   **Temperament Standards**
   3.1   A primary consideration in selecting a detector dog is that it should have the suitable temperament for the role. A potential detector dog should be even tempered and demonstrate a confident outgoing investigative attitude.

The temperament is in direct connection and control of the intent, motivation, attitude, performance, response and reaction.

3.2   Example of temperament flaws include: a variety of fears, poor past experiences from which the dog has not recovered, unwarranted aggression or shyness; an over or under reaction to external stimuli. Dogs must be able to tolerate a variety of work conditions appropriate to the task.

4.   Evaluation Methods

4.1   In general, evaluation of adult dogs should take place between 12 and 36 months of age because this is when dogs are normally behaviorally and socially mature.

4.2   Evaluation should be conducted by the buyer or their representative and be carried out in an environment unfamiliar to the dog, but indicative of the type where the dog will be operating after training. The supplier should not normally be present during the evaluation.

5.   Environmental soundness evaluation

5.1   The environmental soundness evaluation is designed to assess the dog's normal reactions to commonly encountered environments. It looks for confidence in all these areas or that the dog after one or two exposures will start to demonstrate marked improved confidence. The evaluation also is looking for independence and continuity of focus without constant handler reinforcement so demonstrating levels of concentration.

The dog should be walked through an environmental conditioning area which will contain different examples of flooring and footing (carpet, wood, ceramic etc), open and closed stairs, temperatures, light values (from bright light to totally dark), open and confined areas, with and without obstacles, and various noise distracters.

6.   Search and retrieve/food drive evaluation

6.1   This evaluation is to assess the dog's ability to hunt and its retrieve/food drive in different environmental conditions. An example of this might be:

Throwing a reward item for recovery on grass, solid wood floor, steel decking, open stairs. Where the throws are indoors, the evaluations are done in full light to complete darkness. The dog should also be evaluated where the evaluator carries out a fake throw where the dog thinks that the

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item has been thrown when it has not. This evaluates the hunt drive. A further evaluation of the hunt drive should be outside where the item is thrown into long grass and also both upwind and downwind. The evaluator should be assessing the dog's change in behavior when the dog can see the reward and is able to anticipate the hunt, the speed with which the dog goes out for the reward as well as the speed of approach and of the strike (pick up). The dog should be assessed for its determination to retain the reward after recovery.

This evaluation is the measurement of the dog's need, drive and desire to obtain its reward in the variable conditions. The dog's performance is graded on the intensity to obtain the reward (speed and possession; persistence to obtain the reward).

7. Sociability Evaluation

7.1   The purpose of this evaluation is to study the dog's reaction to people, dogs and other animals as appropriate. It is to assess abnormal aggression, submission, fear and potential for distraction.

7.2   This evaluation should be done with and without the dog's expected detection reward (ball, Kong, towel, food).

7.3   An example of an evaluation could be:

The dog is led by its handler through a minimum of two people. The dog should move between the people without overt response, without showing avoidance-behavior or aggression. Curious sniffing is evaluated as a completely natural social behavior and therefore is considered as harmless as ignoring of the passive person group. An excessive avoidance behavior and an excessive aggressive response have to be judged as negative.

The evaluation should be then repeated to assess the dog's ability to recover its primary reward (ball, Kong, towel, food) in and around the people. The reward should be thrown near them and the evaluation will assess the dog's ability not to be distracted by those standing round the reward.

8.   Tracking Evaluation

8.1   This test determines whether or not the dog has any natural tracking ability or any previous training. It measures his desire/ability to use his nose, his interest level, his desire to pursue the track and his tenacity to stay with it to the end.

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An example of the evaluation could be:

The track would be laid in an open field free from distractions and with grass up to six inches in height. The quarry will walk in a straight line, downwind, for approximately 200 feet, lay a ball at the end and return to the start, double laying it. The track can be marked by scuffing it but the handler must know where the track is. It is then aged for 10 minutes. The dog is cast over the track without encouragement to see if he will indicate and pursue it on his own. If he does not then some direction can be given. Once he has indicated the track, observe his level of interest, if he stays with it or distracts and if he is happy working the track. This test is merely a measure of what there is to work with and is not a pass/fail situation.

9.   Desirable evaluation outcomes

9.1   Desirable outcomes may include but are not limited to:

Stable and outgoing in any environment

Should have an excellent retrieve/hunt drive on a thrown or hidden object.

Concentration and maintenance of focus over time with the dog's attention on the object, regardless of area and other distractions.

The dog should maintain strong drive throughout the entire evaluation

The dog should demonstrate independent sniffing behavior

The dog should demonstrate independent searching behavior

10.   Undesirable evaluation outcomes

10.1   Undesirable outcomes may include but are not limited to :

Dog chases but does not search for the object

Will not search/hunt for the object

Gives up the search easily

Will not chase a moving object

Chases but leaves for distractions, such as animal contamination - i.e. urine/feces – other people or casual items in area - i.e. piece of paper on ground

Distracted/overwhelmed by the environmental conditions

Behaves in a shy manner

Behaves in a nervous manner

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Behaves in an overly aggressive manner

Fail to search

Fail to hunt for the odor/object

Fail to find the odor/object.

Show a lack of search intensity.

Show a lack of stamina

Diminishing interest in the reward during the evaluation

Over-aggressive dogs that are unable to work around people

Over-aggressive dogs that are unable to work around other dogs

Dogs that exhibit excessive panting that is not due to heat or exercise.

Dogs with low drives

Dogs that do not have the desire to complete the task.

Dogs that are easily distracted by noise, people, other dogs

11.   Evaluation structure and method

11.1   Examples of detailed evaluation assessment and scoring system are at Annex A.

PHYSICAL AND MEDICAL

12.   Physical evaluation

12.1   Preliminary requirements

To ensure proper identification, all dogs submitted for evaluation must have a collar/harness with the dog's name affixed to it.

The collar/harness must be strong enough to restrain the dog.

It is considered a best practice to ensure that a computer microchip/tattoo for identification purposes is implanted in each dog.

13.   Breed, sex, weight and height requirements

13.1   Breeds historically selected for detection purposes come from the sporting, herding, hound and working categories.

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13.2   Age. The adult dog should be 12 to 36 months of age at time of the evaluation.

13.3   Sex. Dogs of either sex have shown good ability in detection work. A female in estrus should be deferred until a minimum of 4 – 6 weeks after completion.

13.4   Weight/Height. Weight must be proportional to the dog's frame and skeletal size. An objective rating system to measure body condition (weight for frame) should be used. (Development and Validation of body condition score system for dogs: a clinical tool. La Flamme Canine practice 1997 Vol 22 pages 10-15.)

13.5   Color.   Any color typical for the breed is acceptable.

14.   Medical requirements

14.1   General. Must be in excellent health, structurally sound and medically able to enter training

14.2   Immunization required for evaluation and procurement. At minimum must either have been vaccinated (essential in the case of Rabies) or have a titer indication showing that a particular vaccination was not needed within the previous 12 months for :

Rabies – vaccination in accordance with state and local laws

Canine distemper (CDV)

Canine adenovirus (type 2) (CAV-2) (Canine Hepatitis)

Parvovirus (CPV-2)

Leptospirosis

There may be particular regional/national requirements which must be considered. The 2006 AAHA (American Animal Hospital Association) guidelines should be consulted.

>   14.2.1 A vaccination/titer certificate issued by a veterinarian with individual dog identification (name, tattoo, brand or microchip #) must be provided on all dogs

14.3   Socialization and ability to be examined. Dogs should be socialized to humans and should be able to tolerate medical examination procedures

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14.4   Minimum signalment data

14.4.1 The following minimum information should appear on all medical record documents and information:

Dog identification

Name

Tattoo number

Microchip number

Whelping date (or age at time of examination if whelping date not known)

Date of examination or entry

Name and signature of examining veterinarian

14.4.1.1   The following should appear at least once in the medical record:

Sex and reproductive status

Breed

Color pattern

Contact information for owner

Contact information for examining veterinarian

14.5   Minimum medical examination database

14.5.1 The following constitutes the best practice to complete minimum database for an examination

14.5.1.1   Complete physical examination

Gait. The gait should be assessed at the walk, trot and run

Skin and coat.   Must be healthy in appearance

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Oral cavity. Dentition.

Heart and lungs

Heart sounds

Heart rate

Heart rhythm

Lung sounds

Cardiovascular system at rest

Cardiovascular system upon exercise

Respiratory system at rest

Respiratory system on exercise

Musculoskeletal system

Nervous system and senses, and sensory organs

Nervous system

Eyes and adenexa

Functional vision

Anatomy of ears

Functional hearing

Nose and nasopharynx

Demonstrated olfactory ability

Reproductive and urinary system.

Intact or neutered reproductive system. Document monorchidism or cryptorchidism.

Urinary tract anatomy

Urinary tract function

Laboratory minimum database

Hematology and blood chemistry

Collection of blood sample for routine testing

Blood chemistry. Complete blood count.

Serology

Canine heartworm testing

Urinalysis

Collection of urine sample for routine testing

Urine specific gravity

Fecal examination.

Collection of fecal sample for routine testing

Skeletal radiology.

Depending on the planned use of the dog, it may be that early signs of degenerative joint disease would not be acceptable.

It is considered a best practice to acquire diagnostic elbow and hip radiographs for evaluation of elbow and hip conformation and that these be reviewed by an independent board certified veterinary radiologist.

It is a best practice to ensure that the minimum patient data are projected or imprinted ("flashed") permanently on the radiograph at the time of exposure

If further evaluation is warranted, evaluations may be completed at the discretion of the veterinarian or the dog may be deemed unacceptable.

Appendix 4 – Kenneling and Healthcare

SWGDOG SC4 – KENNELING AND HEALTHCARE
Posted for public comment 4/22/06 – 6/22/06. Approved by membership 10/2/2006.

Health, Housing and Husbandry of Detection Dogs

1. Introduction:

This topic contains advice on managing the health, housing and husbandry of
Detection Dogs. The United States has specific legislation to secure the welfare of all
kinds of animals. The American Veterinary Medical Association and other various
veterinary groups have also developed standards and best practices for the health
care and management of dogs. These information sources should be consulted for
further information on issues involving the health, housing and husbandry of
detection dogs. It is very important for all canine detection services to keep dogs in
good health and mentally fit, both on and off of duty hours. It is necessary to have an
optimal physical and mental condition in order to optimize the potential of these
dogs.

This paper will introduce housing recommendations, husbandry or general care
issues, and health care issues related to management of the working detection dog.
These guidelines are recommended but are not mandated to service dogs who are
owned by individuals

2. Housing

Housing will be divided into two categories: Contract/Governmental and Home
Kenneling. The situations discussed here are: units for training, for operational
work, for sick dogs, and for dogs in quarantine.

2.1 Contract/Government Housing

2.1.1 Introduction

In Contract/Government Housing, permanent kennel staff
takes care of the dogs. They provide feeding, cleaning, health
care and basic exercise for the dogs, secures the dogs from
being neglected when the handler is off duty.
Contract/Government Housing needs to provide the dog with

rest, food and sleep. The structure of the facility influences the mental and physical well-being of the dog.

2.1.2 Contract/Government Housing Recommended Guidelines

Kennel facilities must at least meet accepted USDA Animal Welfare Act guidelines. See Animal Code of Federal Regulations: Title 9, Volume 1 January 1, 2003 (CITE: 9CFR3.6, pp 48-50). See Appendix A.

In addition to the USDA guidelines, our recommendations include the following:

The facility shall be kept dry and clean and potable water should be provided. It should protect against environmental extremes. The kennel environment should be well ventilated to provide adequate air exchange.

Dogs should not be housed long term in a sky kennel, transportation kennel/crate.

A solid wall barrier measuring at least 48 inches high shall separate adjacent kennels.

The flooring of each kennel run should be graded and sealed to allow water to run off and prevent standing water.

A resting surface of at least 6 inches off the kennel floor shall be in place for the dog to have access to a dry surface.

The enclosures shall be sanitized daily and disinfected at least once a week. Disinfectant solutions must be non-harmful. They shall be used within the manufacture recommended dilution guidelines. A Material Safety Data Sheet (MSDS) concerning the disinfectant agents shall be posted in the facility.

2.1.3 Contract/Government Housing Medical Issues

In Contract/Government Housing it is advisable to have a separate kennel area to isolate sick dogs from well dogs. In the absence of a separate kennel for sick dogs, a protocol must be established to assure that sick dogs are separated from the healthy dog population. For example, take sick dogs to a veterinary hospital where the dogs stay until they have recovered.

2.1.4 Contract/Government Housing Quarantine

This document is a research report submitted to the U.S. Department of Justice. This report has not been published by the Department. Opinions or points of view expressed are those of the author(s) and do not necessarily reflect the official position or policies of the U.S. Department of Justice.

The quarantine period shall last a minimum period of 10 days with a best practice of 14 days.

When new dogs are brought into the facility, these dogs shall be separated and housed away from the healthy dog population. The dog should be given a preventative worming treatment upon arrival.

During the quarantine period the dog must test negative for heartworm and/or have proof it has received heartworm preventative. Dogs shall test negative for intestinal parasites before being included into general dog population.

The dogs shall have proof of current vaccination or proper titer for the core vaccines. These vaccines include: Rabies, Distemper, Hepatitis (Adenovirus 2), and Parvovirus. If there is no proof of current vaccination the dogs should then be vaccinated.

2.1.5 Contract/Government Housing Recommended Facility Requirements

In Contract/Government Housing, there are a number of facility requirements. The most important are:

- Exercise and play area
- Supplies for first aid and minor veterinary emergencies
- Human first aid kit
- Food preparation and storage area (for storage Requirements see Section 3.1.2)
- Record system to identify the dog, eating habits, excrements and medical status.
- Dog cleaning and grooming area

2.1.6 Personnel

The kennel personnel shall be competent in the care and management of detection dogs.

2.2 Home Kennel

2.2.1 Introduction

Home kenneling is where a detection dog resides with the handler. Off-duty care is provided by the handler.

2.2.2 Home Kennel Housing Recommended Guidelines

Kennel facilities must at least meet accepted USDA Animal Welfare Act guidelines. See Animal Code of Federal Regulations: Title 9, Volume 1 January 1, 2003 (CITE: 9CFR3.6, pp 48-50). See Appendix A.

In addition to the USDA guidelines, our recommendations include the following:

The kennel shall be constructed to provide security and shelter for the dog. It should be kept dry and clean and potable water should be provided. It should protect against environmental extremes. The kennel environment should be well ventilated to provide adequate air exchange.

In an outdoor kennel, an internal housing box should be provided to protect the dog from environmental extremes. The box should be made of a material that provides safe and sanitary conditions.

In a home kennel environment that has an exercise area, it is recommended that the kennel floor space be at least 4 foot by 8 foot. In a home kennel environment without an exercise area, we recommend a 10 foot by 10 foot kennel floor space and at least 6 foot in height. It is recommended that the kennel space have an enclosed top. Dogs should not be housed long term in a sky kennel or transportation kennel/crate.

An exercise area is an enclosed space of at least 10 foot by 10 foot dimensions.

The flooring of each kennel run should be graded and sealed to allow water to run off and prevent standing water.

A resting surface of at least 6 inches off the kennel floor shall be in place for the dog to have access to a dry surface.

The enclosures shall be disinfected at least once a week. Disinfectant solutions must be non-harmful. They shall be used within the manufacture recommended dilution

guidelines. A Material Safety Data Sheet (MSDS) concerning the disinfectant agents shall be on the premises.

2.2.3 Home Kennel Housing Handler Responsibilities

The handler shall provide necessary health care and grooming. The handler shall provide daily and weekly sanitation of the kennel.
The handler shall be responsible for feeding and watering the dog.

The handler shall provide adequate exercise and mental stimulation for the dog.

3. Husbandry

3.1 Nutrition

The nutritional needs of the detection dog can be complex. The dietary program needs to provide the dog with all the nutritive substances necessary for growth, maintenance and activity. The correct diet is determined by studying the energy needs of the dogs. There are different requirements in function of growth, environment, work, digestibility, maintenance, climate, age, reproduction, disease, and individual needs.

Dog foods that meet Association of American Feed Control Officials (AAFCO) standards contain the necessary daily vitamins and minerals. The food should be of high quality and digestibility. If a health condition merits a specialized diet a veterinary recommended dietary program shall be implemented.

The diet should maintain the dog in proper working condition. Use of a body conditioning scoring system can help to determine the amount of food provided to the dog. A body score of 2-3 on a scoring system ranging between 1 and 5 is considered optimum. The diet can be manipulated according to the metabolic needs of the dog. (Laflamme, D. (1997) Development and validation of a body condition score system for dogs: a clinical tool. Canine Pract. 22: 10–15).

3.2 Food Preparation and Storage

Keep all kitchen surfaces and food preparation utensils clean at all times.

Food shall be stored in an environmentally maintained room whose temperature is maintained at the manufacturers recommended storage and temperature range.

Dog food shall be stored in rodent and pest proof containers.

Dispose of uneaten food immediately after the feeding period.

Empty all trash containers as needed or at least daily, to preclude attracting pests into the facility.

3.3 Physical and Mental Stimulation

3.3.1 All dogs need access to or participate in activities or experiences that enrich their physical and mental states. Application of enrichment options will be at the discretion of the local management and trainer, to ensure that the options are safe, appropriate and beneficial to the dog.

3.3.2 A dog needs daily physical exercise and mental stimulation. This would include taking the dog out for regular walks, and allowing more intensive exercise on a playing field or some other free-roaming facility. The daily exercise by the handler or the kennel staff optimizes the efficiency and performance of the dog. Careful observation of the dog during this daily exercise can alert both the handler and the kennel staff to physical problems.

3.4 Daily health check and hygiene

3.4.1 The handler or the kennel staff should check the dogs' health daily.

- This is a nose to tail examination. It includes the examination of the skin, eyes, ears, oral cavity, limbs, feet, genitalia, body functions and attitude.
- Sometimes a dog's abnormally strong body odor will indicate a health problem.
- Observe the movements of the dogs during exercise and training,

- Observe the dogs excrements. If a general excrement problem is seen it can indicate something is wrong with the dog.
- The kennel area and dog house should be checked for hazards and invaders on a routine basis.

3.4.2 The dog needs to be groomed routinely, and kept clean.

3.5 Transport

3.5.1 Air Transport should be in compliance with local, state, federal or air carrier regulations. (Reference www.iata.org)

3.5.2 Any vehicle/vessel utilized to transport working dogs should provide a secure and temperate environment which is suitable to the general health and well being of the animal. Recommendations include;
- Sufficient air exchange to suit conditions
- Protection from environmental extremes
- A secured container with non-slip flooring
- Provide sufficient space to allow each dog to turn about freely, to stand, sit and lie in a comfortable, normal position
- Containers should prohibit animals from making contact with each other and the general public.

4. Dog health care

4.1 A veterinarian must examine working dogs at least once a year. Some searching dogs work in more hazardous circumstances. These dogs may need to be monitored more frequently. The local management, kennel staff or the handler is responsible for coordinating veterinary examinations.

4.2 Immunization required for evaluation and procurement. At minimum must either have been vaccinated (essential in the case of Rabies) or have a titer indication showing that a particular vaccination was not needed within the previous 12 months for:

Rabies – vaccination in accordance with state and local laws

Canine distemper (CDV)

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Canine adenovirus (type 2) (CAV-2) (Canine Hepatitis)

Parvovirus (CPV-2)

Leptospirosis

There may be particular regional/national requirements which must be considered. The 2006 AAHA (American Animal Hospital Association) guidelines should be consulted

4.3 In addition to vaccinations dogs also shall receive regular checks for internal and external parasites and a blood chemistry profile.

4.4 Monthly preventative for fleas, ticks, and heartworm shall be administered by the handler or designated caregiver.

4.5 If additional reasons arise for veterinary care it is the responsibility of the handler or designated responsible party to ensure that timely care is provided.

4.6 In the event that a dog bites a person refer to local, state and federal regulations.

5. Breeding Kennels to be addressed later (a link to be provided later)

6. Appendix A

[Code of Federal Regulations]
[Title 9, Volume 1]
[Revised as of January 1, 2003]
From the U.S. Government Printing Office via GPO Access
[CITE: 9CFR3.6]

[Page 48-50]

TITLE 9--ANIMALS AND ANIMAL PRODUCTS

CHAPTER I--ANIMAL AND PLANT HEALTH INSPECTION SERVICE, DEPARTMENT OF AGRICULTURE

PART 3--STANDARDS--Table of Contents

Subpart A--Specifications for the Humane Handling, Care, Treatment, and
        Transportation of Dogs and Cats \1\

Sec. 3.6 Primary enclosures.

Primary enclosures for dogs and cats must meet the following minimum requirements:
(a)   General requirements.
    (1) Primary enclosures must be designed and constructed of suitable materials so that they are structurally sound. The primary enclosures must be kept in good repair.
    (2) Primary enclosures must be constructed and maintained so that they:
        (i)   Have no sharp points or edges that could injure the dogs and cats;
        (ii)   Protect the dogs and cats from injury;
        (iii) Contain the dogs and cats securely;
        (iv)   Keep other animals from entering the enclosure;
        (v)   Enable the dogs and cats to remain dry and clean;
        (vi)   Provide shelter and protection from extreme temperatures and weather conditions that may be uncomfortable or hazardous to all the dogs and cats;
        (vii) Provide sufficient shade to shelter all the dogs and cats housed in the primary enclosure at one time;
        (viii) Provide all the dogs and cats with easy and convenient access to clean food and water;
        (ix)   Enable all surfaces in contact with the dogs and cats to be readily cleaned and sanitized in accordance with Sec. 3.11(b) of this subpart, or be replaceable when worn or soiled;
        (x)   Have floors that are constructed in a manner that protects the dogs' and cats' feet and legs from injury, and that, if of mesh or slatted construction, do not allow the dogs' and cats' feet to pass through any openings in the floor;
        (xi)   Provide sufficient space to allow each dog and cat to turn about freely, to stand, sit, and lie in a comfortable, normal position, and to walk in a normal manner; and
        (xii) Primary enclosures constructed on or after February 20, 1998 and floors replaced on or after that date, must comply with the requirements in this paragraph (a)(2). On or after January 21, 2000, all primary enclosures must be in compliance with the requirements in this paragraph (a)(2). If the suspended floor of a primary enclosure is constructed of metal strands, the strands must either be greater than \1/8\ of an inch in diameter (9 gauge) or coated with a

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material such as plastic or fiberglass. The suspended floor of any primary enclosure must be strong enough so that the floor does not sag or bend between the structural supports.

(b)   Additional requirements for cats—

(1) Space. Each cat, including weaned kittens, that is housed in any primary enclosure must be provided minimum vertical space and floor space as follows:

(i)   Prior to February 15, 1994 each cat housed in any primary enclosure shall be provided a minimum of 2\1/2\ square feet of floor space;

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(ii) On and after February 15, 1994:
(A) Each primary enclosure housing cats must be at least 24 in. high (60.96 cm);
(B) Cats up to and including 8.8 lbs (4 kg) must be provided with at least 3.0 ft\2\ (0.28 m\2\);
(C) Cats over 8.8 lbs (4 kg) must be provided with at least 4.0 ft\2\ (0.37 m\2\);

(iii) Each queen with nursing kittens must be provided with an additional amount of floor space, based on her breed and behavioral characteristics, and in accordance with generally accepted husbandry practices. If the additional amount of floor space for each nursing kitten is equivalent to less than 5 percent of the minimum requirement for the queen, such housing must be approved by the attending veterinarian in the case of a research facility, and, in the case of dealers and exhibitors, such housing must be approved by the Administrator; and

(iv) The minimum floor space required by this section is exclusive of any food or water pans. The litter pan may be considered part of the floor space if properly cleaned and sanitized.

(2) Compatibility. All cats housed in the same primary enclosure must be compatible, as determined by observation. Not more than 12 adult nonconditioned cats may be housed in the same primary enclosure. Queens in heat may not be housed in the same primary enclosure with sexually mature males, except for breeding. Except when maintained in breeding colonies, queens with litters may not be housed in the same primary enclosure with other adult cats, and kittens under 4 months of age may not be housed in the same primary enclosure with adult cats, other than the dam or foster dam. Cats with a vicious or aggressive disposition must be housed separately.

(3) Litter. In all primary enclosures, a receptacle containing sufficient clean litter must be provided to contain excreta and body wastes.

(4) Resting surfaces. Each primary enclosure housing cats must contain a resting surface or surfaces that, in the aggregate, are large enough to hold all the occupants of the primary enclosure at the same time comfortably. The resting surfaces must be elevated, impervious to moisture, and be able to be easily cleaned and sanitized, or easily replaced when soiled or worn. Low resting surfaces that do not allow the space under them to be comfortably occupied by the animal will be counted as part of the floor space.

(5) Cats in mobile or traveling shows or acts. Cats that are part of a mobile or traveling show or act may be kept, while the show or act is traveling from one temporary location to another, in transport containers that comply with all requirements of Sec. 3.14 of this subpart other than the marking requirements in Sec. 3.14(a)(6) of this subpart. When the show or act is not traveling, the cats must be placed in primary enclosures that meet the minimum requirements of this section.

(c)   Additional requirements for dogs—

(1) Space.

(i)   Each dog housed in a primary enclosure (including weaned puppies) must be provided a minimum amount of floor space, calculated as follows: Find the

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mathematical square of the sum of the length of the dog in inches (measured from the tip of its nose to the base of its tail) plus 6 inches; then divide the product by 144.

The calculation is: (length of dog in inches + 6) x (length of dog in inches + 6) = required floor space in square inches. Required floor space in inches/144 = required floor space in square feet.

   (ii) Each bitch with nursing puppies must be provided with an additional amount of floor space, based on her breed and behavioral characteristics, and in accordance with generally accepted husbandry practices as determined by the attending veterinarian. If the additional amount of floor space for each nursing puppy is less than 5 percent of the minimum requirement for the bitch, such housing must be approved by the attending veterinarian in the case of a research facility, and, in the case of dealers and exhibitors, such housing must be approved by the Administrator.

   (iii) The interior height of a primary enclosure must be at least 6 inches higher than the head of the tallest dog in the enclosure when it is in a normal standing position: Provided That, prior to February 15, 1994, each dog must be able to stand in a comfortable normal position.

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   (2) Compatibility. All dogs housed in the same primary enclosure must be compatible, as determined by observation. Not more than 12 adult nonconditioned dogs may be housed in the same primary enclosure. Bitches in heat may not be housed in the same primary enclosure with sexually mature males, except for breeding. Except when maintained in breeding colonies, bitches with litters may not be housed in the same primary enclosure with other adult dogs, and puppies under 4 months of age may not be housed in the same primary enclosure with adult dogs, other than the dam or foster dam. Dogs with a vicious or aggressive disposition must be housed separately.

   (3) Dogs in mobile or traveling shows or acts. Dogs that are part of a mobile or traveling show or act may be kept, while the show or act is traveling from one temporary location to another, in transport containers that comply with all requirements of Sec. 3.14 of this subpart other than the marking requirements in Sec. 3.14(a)(6) of this subpart. When the show or act is not traveling, the dogs must be placed in primary enclosures that meet the minimum requirements of this section.

   (4) Prohibited means of primary enclosure. Permanent tethering of dogs is prohibited for use as primary enclosure. Temporary tethering of dogs is prohibited for use as primary enclosure unless approval is obtained from APHIS.

(d) Innovative primary enclosures not precisely meeting the floor area and height requirements provided in paragraphs (b)(1) and (c)(1) of this section, but that provide the dogs or cats with a sufficient volume of space and the opportunity to express species-typical behavior, may be used at research facilities when approved by the Committee, and by dealers and exhibitors when approved by the Administrator.

(Approved by the Office of Management and Budget under control number 0579-0093)

[56 FR 6486, Feb. 15, 1991, as amended at 62 FR 43275, Aug. 13, 1997; 63 FR 3023, Jan. 21, 1998; 63 FR 37482, July 13, 1998]

Animal Health and Husbandry Standards

SWGDOG SC5 – SELECTION OF HANDLERS
Posted for public comment 7/10/06 – 9/10/06. Approved by membership 10/2/2006.

Handler Selection

Statement of Purpose: This document facilitates the process of selecting qualified canine handlers and instructors. In addition, it outlines the essential curricula recommended for the training of both positions.

Statement of Purpose: To provide information that will assist in the selection of qualified individuals for the position of Canine Handler.

HANDLER QUALIFICATIONS

1. **Personality Traits** - The Canine Supervisor (CS) is probably the person best suited to verify a candidate's qualifications. Whenever possible, have the CS interview the candidate's previous or current supervisors to determine if the applicant possesses the following qualities necessary for success as a Canine Handler:

   1.1. Integrity – Candidate must possess uprightness of character and soundness of moral principle
   1.2. Work Ethic - Candidate should be a hard worker with a history of thoroughly completing all assigned tasks.
   1.3. Teamwork - Candidate must be able to work together with teammates to achieve team goals. That may mean accepting various roles so team goals may be accomplished.
   1.4. Flexibility – Candidate must be willing to work various shifts and long hours and be able to adapt to diverse, sometimes unpredictable, working environments.
   1.5. Trainability - A successful candidate must possess both the potential ability and the motivation to learn and develop all the skills required of a handler. Having an open mind and the ability to learn from successes and failures are desirable traits.
   1.6. Confidence - Candidate must be comfortable speaking in public with the ability to convey his or her expertise through speech.
   1.7. Responsibility - Candidate must have a proven track record of fulfilling his or her obligations and duties and have shown accountability for his or her actions.

1.8. Judgment - Candidate must possess the ability to assess a given situation, make sound decisions based on that assessment and adjust efforts accordingly.

1.9. Dedication - Candidate must be focused and committed to the success of the team.

1.10. Initiative **-** Candidate must possess the ability to act and make decisions on own without help or supervision, to ensure work is completed.

1.11. Physical requirements: Candidate must meet or exceed the physical requirements determined by the appropriate department, organization or agency.

1.12. Tactically sound – Some canine handler positions are also law enforcement positions. Where appropriate to the position, the candidate must also possess good tactical skills as a police officer and excel in current and previous law enforcement duties in addition to his or her skills as a canine handler.

2. **Training and Experience** – Have the Canine Supervisor gather as much information as possible regarding the candidate's prior training and experience in the field.

    2.1. Prior experience/training - Note any training received or experience gained working in the canine industry. If no prior experience exists aptitude should be demonstrated.

    2.2. Law Enforcement / Military/ Security Background **-** Note any training received or experience gained working in law enforcement, military or security.

    2.3. Specialized Units **–** Establish if the candidate has any prior training or experience working in specialized units and/or if the candidate has any working knowledge of their operational procedures.

3. **Temporary Assignment** - Once the Canine Supervisor decides a candidate possesses the qualifications deemed necessary to be a proficient handler, that candidate can be temporarily assigned to a Canine Unit where the Canine Supervisor can continue to evaluate those qualifications. This will also serve to give the candidate an opportunity to acquaint his or herself with all aspects of the position.

4. **Special Considerations** –

    4.1 If the position requires that the handler must kennel the canine at his or her residence, verify that the candidate has this capability (Refer back to SC4).

    4.2 Consideration should be given to conducting a background investigation prior to handler appointment.

4.3 Consideration given to conducive family/home/work environment.

Handler Training

Statement of Purpose: To ensure that all working canine handlers get the same basic education pertaining to canine handling. To ensure that there is continuity across agencies and organizations as to the content of the canine handler's curriculum.

HANDLER TRAINING OVERVIEW

1. Canine handler training should combine theory (rules, ideas, principles and techniques) and practical skill objectives that the student handler must learn and demonstrate.

2. The student should have at a minimum 200 hours of practical application under instructor supervision.

3. The student should have at a minimum 40 hours of classroom instruction from a qualified instructor.

4. The following topics are covered in detail in the canine handler curriculum:

Chapter	Paragraph
Safety	1
Daily Care of the Canine	2
Kenneling	3
Obedience	4
Emergency Vet Care	5
Legal Issues & Case Law	6
Search Techniques	7
Proficiency Training	8
Training Aid Storage, Maintenance, and Accountability	9
Concealment Techniques	10
Record Keeping	11
Principles of Conditioning	12
Drive & Traits	13
Properties of Scent	14
Indication / Response / Reward	15

CURRICULUM

1. **Safety Instruction**
   1.1. Handler (and other humans) safety
      1.1.1. OBJECTIVE: The student shall receive instruction on how to properly muzzle the canine using a muzzle or leash.
      1.1.2. OBJECTIVE: The student shall receive instruction on how to safely break-up a dog fight to prevent injury to the dogs and handler(s).
      1.1.3. OBJECTIVE: The student shall receive instruction on how to protect himself, herself, and others should their canine partner become aggressive.
      1.1.4. OBJECTIVE: The student shall be instructed on how to safely manage the canine during a veterinary examination or procedure.
   1.2. Kennel safety
      1.2.1. OBJECTIVE: The student shall receive instruction on canine and handler safety while in a kennel environment.
      1.2.2. OBJECTIVE: The student shall receive instruction on the proper way to approach and enter a strange dog's kennel.
      1.2.3. OBJECTIVE: The student shall receive instruction on how to move with or without the dog within a kennel to ensure personal safety and prevent dog fights.
      1.2.4. OBJECTIVE: The student shall receive instruction on the importance of weekly kennel inspections to prevent the canine from encountering hazards such as sharp objects.
   1.3. Transportation Safety
      1.3.1. OBJECTIVE: The student shall receive instruction on how to safely transport canines in vehicles specifically designed for that purpose as well as vehicles not equipped to carry canines.
      1.3.2. OBJECTIVE: The student shall receive instruction on how to safely transport personnel in the same vehicle as the canine.
      1.3.3. OBJECTIVE: The student shall receive instruction on how to prepare an air crate for the safe transportation of the canine.

2. **Daily Canine Care**
   2.1. Nutrition and Hydration
      2.1.1. OBJECTIVE: The student shall receive instruction on how to fulfill the canine's requirements for food and water.
      2.1.2. OBJECTIVE: The student shall receive instruction on how to properly feed, follow feeding schedule, monitor food intake and make adjustments to diet when needed.
      2.1.3. OBJECTIVE: The student shall receive instruction on how to provide a continuous supply of clean, cool water.
   2.2. Exercise and Stimulation
      2.2.1. OBJECTIVE: The student shall receive instruction on the role of exercise in the canine's daily activities, the importance of a daily

exercise regimen and how to ensure the canine's exercise needs are met.

    2.2.2. OBJECTIVE: The student shall receive instruction on how to provide appropriate exercise to ensure the canine's physical well-being, including weight management, muscle tone and cardiovascular fitness.

    2.2.3. OBJECTIVE: The student shall receive instruction on how to provide mental stimulation such as physical conditioning and appropriate environmental enrichment to ensure the canine's mental well-being.

    2.2.4. OBJECTIVE: The student shall receive instruction on how to provide exercise that will complement the canine's trained discipline(s).

2.3. Scheduled Rest

    2.3.1. OBJECTIVE: The student shall receive instruction on how to ensure that the canine is provided with adequate and appropriate rest periods.

    2.3.2. OBJECTIVE: The student shall receive instruction on the value of adequate rest for the canine while in its kennel.

    2.3.3. OBJECTIVE: The student shall receive instruction on the value of adequate rest for the canine between operational periods.

2.4. Health Related

    2.4.1. OBJECTIVE: The student shall receive instruction on how to conduct a daily inspection of the dog to ensure it is being maintained in good health.

        2.4.1.1. The student shall receive instruction on how to care for the canine's bathing and grooming needs as well as instruction on the proper use of grooming equipment and techniques.

        2.4.1.2. The student shall receive instruction on eye and ear care and learn how to care for the canine's nose, mouth, genitalia and extremities.

        2.4.1.3. The student shall receive instruction on how to recognize and treat internal and external parasites.

    2.4.2. OBJECTIVE: The student shall receive instruction on how to provide the canine time out of its kennel daily, to allow for elimination of biologic waste, a health inspection including biological waste inspection, and an inspection and cleaning of the kennel.

    2.4.3. OBJECTIVE: The student shall receive instruction on how to administer medications as needed.

3. Kenneling

3.1. Kenneling at home - OBJECTIVE: Where applicable the student shall receive instruction on how to properly kennel the canine in a home environment.

    3.1.1. OBJECTIVE: The student shall receive instruction on how to select the ideal location for a home kennel.

    3.1.2. OBJECTIVE: The student shall receive instruction on how to select the proper materials and design for construction of a home kennel.

3.1.3. OBJECTIVE: The student shall receive instruction on how to inspect the home kennel each day to ensure it is safe, clean and secure.

3.1.4. OBJECTIVE: The student shall receive instruction on how to maintain the kennel through daily cleaning, disinfecting and other required maintenance.

3.2. Kenneling at a Central Facility- OBJECTIVE: The student shall receive instruction on how to properly kennel the canine in a centralized facility. Many of the same safety issues will apply to kenneling at home and kenneling at a centralized facility.

3.2.1. OBJECTIVE: The student shall receive instruction on how to inspect the kennel each day to ensure it is safe, clean and secure.

3.2.2. OBJECTIVE: The student shall receive instruction on how to maintain the kennel through daily cleaning, disinfecting and other required maintenance.

4. **Obedience**

4.1. Purpose of Obedience Training- OBJECTIVE: The student shall receive instruction on how to attain various levels of control over the canine using obedience training.

4.2. Voice Tones - OBJECTIVE: The student shall receive instruction on how to effectively communicate with the canine using various voice tones.

4.3. Body Language - OBJECTIVE: The student shall receive instruction on how to identify and use body language to properly communicate with the canine.

4.4. Training Equipment - OBJECTIVE: The student shall receive instruction on the proper use of equipment including but not limited to leashes, choke (slip) collars, fur saver collars, harnesses, prong collars, clickers and remote trainers.

4.5. Obedience Commands - OBJECTIVE: The student shall receive instruction on basic obedience commands and be able to demonstrate their mechanics correctly.

4.6. Praise and Corrections - OBJECTIVE: The student shall receive instruction on proper praise and correction techniques. Additionally, the student will recognize and demonstrate the correct usage and timing of motivational tools.

5. **Canine Health and Emergency Veterinary Care** - OBJECTIVE: The student shall receive instruction on how to assess their canine partner's vital signs, including body temperature, respiration, heart rate, reflexes and mobility.

5.1. Canine Anatomy - OBJECTIVE: The student shall receive instruction on the terminology associated with canine anatomy.

5.2. First Aid - OBJECTIVE: The student shall receive instruction on the contents of a canine first aid kit and how to utilize the components in emergency situations.

5.3. Trauma - OBJECTIVE: The student shall receive instruction on how to address trauma-related events such as gunshot wounds, broken bones, excessive bleeding, snake bites, insect bites, car accidents and dog fights.

5.4. CPR - OBJECTIVE: The student shall receive instruction on the importance of cardio-pulmonary resuscitation to the canine. Instruction should be conducted by a recognized professional.

5.5. Transport - OBJECTIVE: The student shall receive instruction on how to provide proper transportation of the injured canine from the field to a veterinary care facility.

5.6. Common Emergency Situations - OBJECTIVE: At minimum, a student will recognize the symptoms of, and the need for emergency care for the following conditions:

5.6.1. Shock

5.6.2. Seizures

5.6.3. Perceived or possible ingestion of poisons/ narcotic or explosive/accelerant

5.6.4. Heat exhaustion

5.6.5. Dehydration

5.6.6. Gastric torsion/bloat

5.6.7. Collapse

5.6.8. Fractures

5.6.9. Profound staggering

6. **Canine Legal Issues and Case Law**
   6.1. Canine Search and Seizure - OBJECTIVE: The student shall receive instruction on applicable local, state, and federal statutes regarding canine search and seizure as they relate to the student's jurisdiction and duties.
   6.2. Canine Team Resumé - OBJECTIVE: The student shall receive instruction on how to successfully develop and document the canine team's reliability, training and certification in a team resumé that will satisfy all legal issues regarding such documentation.
   6.3. Canine Searches (sniff) - OBJECTIVE: The student shall receive instruction on and become familiar with the legal issues and applicable case law surrounding the use of canines for duties including but not limited to:
       6.3.1. Residential searches
       6.3.2. Vehicle searches
       6.3.3. Vessel searches
       6.3.4. School searches
       6.3.5. Person searches
       6.3.6. Currency searches
       6.3.7. Package and luggage searches
       6.3.8. Open field searches
       6.3.9. Public and private property searches
   6.4. Handling and Documentation of Evidence - OBJECTIVE: Where appropriate, the   student shall receive instruction on the necessity for proper handling of evidence including documentation and the chain of custody.

7. **Search Techniques**
   7.1. Techniques - OBJECTIVE: The student shall receive instruction on search techniques that complement the training and conditioning of the canine.
   7.2. Planning - OBJECTIVE: The student shall receive instruction on how to develop a plan prior to deploying his or her canine for a search. A well-designed search plan should include but not be limited to:
       7.2.1. Gathering intelligence
       7.2.2. Canine and handler safety
       7.2.3. Tactical and operational considerations
       7.2.4. Minimize evidence disturbance
       7.2.5. Necessary resources
       7.2.6. Environmental conditions
   7.3. Priorities - OBJECTIVE: The student shall receive instruction on how to prioritize areas of the search. Factors that can affect the priorities include training of the search team and the information and intelligence that was gathered during the planning stage of the canine team's deployment.
   7.4. Patterns - OBJECTIVE: The student shall receive instruction on how to deploy the canine in a pattern that is consistent with the canine team's discipline and canine's training. The pattern selected should be systematic to ensure the most effective search.

8. Proficiency Training

8.1.   OBJECTIVE: The student shall receive instruction on the importance of varying all aspects of the canine team training experience as dictated by the needs of the canine and/or handler or program requirements.

8.2.   OBJECTIVE: The student shall receive instruction on the importance of maintaining the proficiency of the canine in the work environment using objective-based training.

8.3.   OBJECTIVE: The student shall receive instruction on the value of conducting detection proficiency training away from the normal work environment which will allow the canine's abilities to be strengthened and/or correct problem areas that may arise.

8.4.   OBJECTIVE: The student shall receive instruction on the importance of blind searches.

8.5.   OBJECTIVE: The student shall receive instruction on the importance of blank searches.

8.6.   Continuous process – a mandated continuous training program should be in place to ensure the effectiveness and reliability of the canine. It is the responsibility of the handler to ensure the proficiency of the canine.

8.7.   Training aids and targets should be placed with an objective in mind.

8.8.   Training aids and targets should be used in a realistic and challenging manner but not used to defeat the canine.

8.9.   Training aids and targets should be placed to ensure the trained odor is present.

8.10. Depending on the type of training being conducted, training aids should be pre-constructed to ensure odor availability.

8.11. A training aid or target should be used in such a fashion as to expose the canine to varying quantities of odor.

8.12. Canines should be trained in a variety of locations to increase the canine's capabilities in new environments.

8.13. OBJECTIVE: The student shall be provided instruction on the value of or the need for proofing.

9. Training Aids

9.1.   Special requirements – OBJECTIVE: The student shall receive instruction on any specific requirements, rules and regulations associated with training aid storage and possession, e.g., ATF guidelines, DEA regulations, local, state, federal regulations, agency or departmental SOPs.
Safe Handling and Storage - OBJECTIVE: The student shall receive instruction on the correct procedures for the safe handling and storage of training aids to ensure security and prevent contamination.

9.1.1.   The student shall receive instruction on the safe handling of training aids to minimize the possibility of contamination and related safety issues.

9.1.2.   The student shall receive instruction on why certain training aids are not stored together due to the possibility of contamination.

9.1.3.   The student shall receive instruction on the procedures related to preventing loss or theft of the training aids and how to prevent damage caused by direct contact with the canine.

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9.2. Accountability - OBJECTIVE: The student shall receive instruction on procedures used to track inventory and ensure accountability of training aids to prevent loss or contamination.

   9.2.1. The student shall receive instruction on the importance of placement of the training aids in the training environment to avoid contamination from contact with strong odors.

   9.2.2. The student shall receive instruction on the importance of conducting periodic inventories of the training aids.

   9.2.3. The student shall receive instruction on procedures for how to report the loss of any training aids.

   9.2.4. The student shall receive instruction on the appropriate procedures for the destruction and disposal of training aids.

9.3. Maintenance - OBJECTIVE: The student shall receive instruction on the importance of maintaining their respective training aids serviceability.

   9.3.1. The student will learn the importance of having damaged or contaminated training aids removed from service or repackaged.

   9.3.2. The student will learn the importance of periodically removing training aids from service and replacing them with new aids.

10. **Recognizing Concealment Techniques** - OBJECTIVE: Where appropriate the student shall receive instruction on how to recognize and become familiar with commonly encountered concealment techniques.

    10.1.   Common areas and conveyances used for concealment may include, but are not limited to:

        10.1.1.   Vehicles.
        10.1.2.   Aircraft.
        10.1.3.   Marine Vessels.
        10.1.4.   Residences
        10.1.5. Persons
        10.1.6. Open field / buried areas.
        10.1.7. Venues
        10.1.8. Check points
        10.1.9.   Transit areas
        10.1.10. Distinguished visitor areas
        10.1.11. General seating areas
        10.1.12. Schools
        10.1.13. Commercial buildings
        10.1.14. Correctional facilities
        10.1.15. Discipline specific

    10.2.   Concealment Methods **-** OBJECTIVE: The student shall receive instruction on how to recognize and become familiar with those methods which may be used for concealment.

        10.2.1.   Geographic Concealment Trend**s -** OBJECTIVE: The student shall receive instruction on how to recognize and become familiar with those geographic concealment trends that are particular to the culture and environment in which their canines are applied.

        10.2.2.   Masking Odors and Agents - OBJECTIVE: The student shall receive instruction on how to recognize and identify agents used to mask or conceal target odors from the canine.

11. **Handler and Canine safety -** OBJECTIVE: The student shall receive instruction on how to recognize and become familiar with situations that may be inherently dangerous or present a substantial risk of injury or death to the canine and handler. Those areas may include but are not limited to:

    11.1.   Armed and/or dangerous suspects
    11.2.   Booby traps and ambush
    11.3.   Secondary or additional devices
    11.4.   Poisons
    11.5.   Explosives
    11.6.   Bio Chemical hazards
    11.7.   Environmental Factors

12. **Record Keeping**

12.1   Canine Records- OBJECTIVE: The student shall receive instruction on and become familiar with all records associated with the training, handling and care of the canine.

    12.1.1.   Canine Health Records - OBJECTIVE: The student shall receive instruction on and become familiar with documenting and maintaining general health care reports on the canine.

    12.1.2.   Training, Proficiency Assessment, Seizure, and/or Deployment/Utilization Records- OBJECTIVE: The student shall receive instruction on and become familiar with writing, documenting and regularly maintaining these records on a daily basis or as required.

    12.1.3.   Training Aid Records - OBJECTIVE: The student shall receive instruction   on record keeping for procurement, handling and disposition of training aids.

12.2.   Case law - OBJECTIVE: The student shall receive instruction on and become familiar with state and federal case law on canine record keeping as it relates to the student's specific discipline and jurisdiction.

12.3.   Canine Handler Training- OBJECTIVE: The student shall receive instruction on and become familiar with documenting and maintaining all records associated with canine handler's training as it relates to and is applicable to the canine handler's duties.

13. Principles of Learning and Conditioning

13.1.   Basic Needs of a Canine - OBJECTIVE: The student shall receive instruction on the basic needs of the canine with respect to their ability for learning:

    13.1.1.   Oxygen

    13.1.2.   Water

    13.1.3.   Food

    13.1.4.   Prey Kill

    13.1.5.   Social contact

    13.1.6.   Pain (minimize)

13.2   Learning Theory - OBJECTIVE: The student shall receive training in learning theory to include but not restricted to:

13.2.1 Classical or Respondent Conditioning - OBJECTIVE: The student shall receive instruction on and the proper use of Classical or Respondent Conditioning.

13.2.2 Operant Conditioning - OBJECTIVE: The student shall receive instruction on and the proper use of Operant Conditioning.

13.2.3 Reward & Reinforcement Training - OBJECTIVE: The student shall receive instruction on Reward Training and its application as it applies to the training method being utilized. Additionally, the student shall receive instruction on ratio and time reward schedules used in canine training.

13.2.4 Escape Training - OBJECTIVE: The student shall receive instruction on Escape Training and its application as it applies to the training being performed.

13.2.5 Avoidance Training-OBJECTIVE: The student shall receive instruction on Avoidance Training and its application as it applies to the training method being performed.

13.2.6 Extinction Training (This also could be part of positive/negative punishment) OBJECTIVE: The student shall receive instruction in the purpose for and proper way to utilize extinction training.

13.2.7 Punishment - OBJECTIVE: The student shall receive instruction in positive and negative punishment and how it applies to the learning process of a canine.

13.2.8 Behavior Modification Techniques - OBJECTIVE: The student shall receive instruction on the proper use of behavior modification techniques including but not limited to; shaping by successive approximation, prompting, chaining, and conditioned reinforcement.

13.2.9 Stimulus Control - OBJECTIVE: The student shall receive instruction on the purpose for and the proper way to control discriminative, response, reinforce and generalization stimuli.

13.2.10 Learning - OBJECTIVE: The student shall receive instruction on Stimulus Discrimination and Stimulus Generalization, and Cueing.

14. The Senses
14.1   Basic Senses- OBJECTIVE: The student shall receive instruction on the canine's basic senses which include:
    13.1.7.   Olfaction
    13.1.8.   Audition
    13.1.9.   Vision
    13.1.10. Taste
    13.1.11. Touch
    13.1.12. Equilibrium
    13.1.13. Temperature
    13.1.14. Proprioception
    13.1.15. Vibratory
    13.1.16. Internal Receptors
14.2   Factors Affecting Basic Senses - OBJECTIVE: The student shall receive instruction on various factors that can affect the canine's basic senses.
    13.1.17. Distractions
    13.1.18. Fatigue
    13.1.19. Disease
    13.1.20. Age
    13.1.21. Noxious Odors
    13.1.22. Adaptation
14.3   The Sensing System - OBJECTIVE: The student shall receive instruction on the canine's sensing system.

13.1.23. Absolute Threshold

13.1.24. Difference Threshold

13.1.25. Saturation Point

13.1.26. Source

15. Drive - There is a strong tradition by many involved in working dog handling and training to explain the behavior of canines by referring to numerous different "drives". Although the term drive is not recognized as a technical behavioral term it is widely used within the working dog community.

OBJECTIVE: The student shall receive instruction on and should understand and recognize the following drives.
   a. Hunt
   b. Prey
   c. Retrieve
   d. Air Scent
   e. Tracking
   f. Rank
   g. Subordinate
   h. Pack
   i. Play
   j. Activity
   k. Fight
   l. Guard
   m. Survival
   n. Food

16. Character Traits - OBJECTIVE: The student should understand and recognize the following character traits.
   a. Trainability
   b. Hardness
   c. Softness
   d. Courage
   e. Confidence
   f. Fear
   g. Sharpness

17. **Properties of Scent** - OBJECTIVE: The student shall be instructed on the definition of scent as it applies to their discipline.
   a. Scent Cone - OBJECTIVE: The student shall be instructed on the definition of a scent cone as it applies to their discipline.
   b. Elements that may affect scent - OBJECTIVE: The student shall be instructed to identify those elements that affect scent to include but not limited to the following:
      i. Environment

    ii. Temperature
   iii. Air/water movement
   iv. Humidity
    v. UV Radiation
   vi. Topography
  vii. Contamination
 viii. Masking odor agents
   ix. Containment
    x. Objects/obstacles
   xi. Time lapse
  xii. Surface material

c. Dissipation of Scent - OBJECTIVE: Student shall receive instruction within his or her specific discipline regarding how an odor dissipates.

d. Scent Picture - OBJECTIVE: The student shall be instructed on and become familiar with the elements that create the scent picture. The student should also be aware of the negative elements affecting the scent picture.

18. Canine Change of Behavior/Working to Source

a. Change of Behavior - OBJECTIVE: The student shall be instructed to recognize and respond to the canine's change in behavior when the canine detects the trained odor.

b. Working to Source - OBJECTIVE: The student shall be instructed to recognize once the canine has portrayed a change in behavior upon detecting a trained odor; it is of paramount importance to allow the canine to independently work the odor to its source.

19. Canine Final Response - OBJECTIVE: The student shall be instructed to recognize the canine's final response (active or passive) to the odor source for which it is trained. Additionally, the student should be instructed on situations that may prevent the canine from giving a final response.

20. Reward - OBJECTIVE: The student shall be instructed on the correct procedures for rewarding their canine. Rewards will be selected by the training entity.

Canine Handler Instructor Selection

Statement of Purpose: To provide information that will assist in the selection of qualified individuals for the position of Canine Handler Instructor.

CANINE HANDLER INSTRUCTOR QUALIFICATIONS

1. The Canine Handler Instructor should embody the same qualifications listed in the section for Canine Handler as well as the qualities listed below.
   1.1. Leadership - The candidate should display the ability to guide and direct people in his or her current position.
   1.2. Communication Skills – The candidate must be able to coherently express his or her thoughts, ideas and feelings, display outstanding oratory and articulation skills with the ability to effectively communicate with senior level management.
   1.3. Provide Feedback – The Instructor candidate must have the ability to make a considered assessment and then provide good and sound constructive criticism.
   1.4. Facilitate Teamwork – The candidate has a working knowledge of team building and team dynamics and the ability to elicit cooperation from coworkers.
   1.5. Organizational Skills – The candidate must possess good organizational and time management skills.
   1.6. Subject Matter Expertise **-** Only a candidate with handling and training expertise in the same discipline as the position opening should be considered for the position of Canine Instructor. Previous handling and training experience needs to be relevant to the discipline.

Canine Handler Instructor Training

Statement of Purpose: To outline the topics that should be covered as good practice in the training of new instructors. Also to ensure that there is continuity across agencies, organizations and departments regarding the content of the Canine Instructor's curriculum.

CANINE HANDLER INSTRUCTOR TRAINING OVERVIEW

It is recommended that an instructor have the training outlined above for new handlers and several years of experience working within the discipline before he or she becomes an instructor in the discipline.

CURRICULUM

1. Plan Formal Training - OBJECTIVE: The student instructor should receive formal training on how to plan training. Course curriculum should include:
    1.1. Selecting the methods of instruction, e.g., lecture, demonstration, that will be incorporated
    1.2. Develop a lesson plan
    1.3. Develop the audio and visual aids needed to complement the instruction material
    1.4. Adequately prepare the classroom to ensure it is conducive to learning.

2. Conducting Training - OBJECTIVE: The student instructor should receive instruction on how to effectively instruct students in a classroom environment. The instruction should include but not be limited to:
    2.1. Different methods used to present information
    2.2. How to eliminate barriers and distractions to communication and learning.
    2.3. How to communicate effectively
    2.4. How best to utilize audio and visual aids.

3. Post Training - OBJECTIVE: The student instructor should receive instruction on how to measure his or her effectiveness as an instructor and how to handle students who are not progressing. This will include:
    3.1. Methods for testing comprehension levels of students
    3.2. Counseling of students
    3.3. Documentation of students' progress

SWGDOG SC 6 – PRESENTATION OF EVIDENCE IN COURT
Posted for public comment 7/10/06 – 9/10/06. Approved by membership
10/2/2006.

Statement of Purpose: These guidelines are not meant to be comprehensive procedures on how evidence is presented in a court of law. Rather, these guidelines provide an overview of issues to consider and a resource of relevant case law to assist the lawyer and the expert witness (i.e., handler, scientist) in the presentation of evidence in court.

INTRODUCTION

The introduction of dogs into policing in the United States in the latter part of the 19th century began largely to combat crime. Dogs were used by patrol officers to track fugitives, and for crowd control. Changing social attitudes towards drugs and their control led to the use of dogs to detect drugs. Many agencies also began to train dogs to detect bombs and other chemicals in arson investigations. Today, dogs are utilized by local, state and federal agencies throughout the country for a variety of purposes in criminal investigations, from tracking, trailing, and human scent discrimination, to substance detection. Such evidence is admissible in a majority of jurisdictions to not only establish probable cause (i.e., in the case of drug detection), but also to identify the perpetrator of a crime (i.e., in the case of human scent discrimination). This evidence, however, may be challenged in court. It is important therefore to establish to the court the reliability of the detector/scent dog team. When such evidence is also relied upon in part to prove the identity of the perpetrator, there must be other evidence to support the accuracy of the identification. The corroborating evidence need not be evidence which independently links the person to the crime. The evidence should be sufficient if it supports the accuracy of the scent discrimination. As a general rule, each dog's ability and reliability is required to be shown on a case-by-case basis. This ability is a fact which, like other facts, may be proven by expert testimony. This testimony should come from the dog handler or trainer, or other qualified expert, who is sufficiently acquainted with the dog, the dog's training, ability and other indicia of reliability. If such person is able to demonstrate specialized expertise in the area of training, tracking or detection, and/or the operational performance of his/her dog, he/she is qualified as an expert to state an opinion as to the ability of the particular dog in question to perform the targeted task.

ESTABLISHING RELIABILITY

Establishing the reliability of a detector/scent dog team is a foundational requirement in cases where dog scent evidence is sought to be introduced as evidence in court. The task of the handler is to provide all necessary information to the attorney handling the matter concerning a specific dog taking part in a given activity (i.e. tracking, drug detection). The preliminary steps in the legal process and the relevant documentation are shown schematically below:

1. Preliminary steps in the process (documentation required)
    1.1. Preparation of detector/scent dog team (maintenance and certification records)
    1.2. Deployment of detector/scent dog team (incident/search report dependent upon results and/or policy)
    1.3. Collection of evidence where applicable (chain of custody records)
    1.4. Presenting detector/scent dog team's results (affidavit or testimony protocols)

In determining the weight to be given to such evidence, the court will consider the training, proficiency, experience, and proven ability, if any, of the dog, its trainer, and its handler, together with all the circumstances surrounding the given activity (i.e. tracking, drug detection). The reliability of a detector/scent dog team can be demonstrated by initial competency, maintenance records and certification as outlined below:

2. Factors used by courts to evaluate the reliability of the detector/scent dog team:
    2.1. Regular maintenance training records, which should reflect:
        2.2.1. Discipline-related training
        2.2.2. The use of masking odors and/or distracting stimuli
        2.2.3. The use of varying quantities of target materials
        2.2.4. The use of varying training scenarios
        2.2.5. Periodic proficiency assessments, including but not limited to, negative control/blank testing
    2.2. Operational experience
    2.3. Detector/scent dog team's annual certification

Although not required by all courts, the fact that the detector/scent dog team is certified annually will bolster the reliability of the team. The successful completion of an annual certification is one factor, among many, that may be considered by the court in establishing reliability when a dog is being used as an investigative tool to develop reasonable suspicion, establish probable cause, or identify the perpetrator of a crime.

The purpose and practicality of a well defined maintenance program is to ensure the continued operational proficiency of the detector/scent dog team in the field. Regular training is meant to improve and enhance the performance of the team. The written documentation of the dog's ongoing training is an important element in

establishing the dog's reliability. Regular maintenance training records document the type and amount of training that the detector/scent dog team has undergone before and after the team's participation in the investigation (i.e., drug seizure, scent identification). Deployment/Utilization logs have limited utility in establishing reliability, other than demonstrating the operational experience of the detector/scent dog team in the field, including confirmed case results. Logs of outcomes from currency sniffs may be used to demonstrate the reliability of the substance detector dog in currency forfeiture cases.

Maintenance training issues that may arise in court include whether the dog is exposed to varying quantities of training substances, masking odors and other distracting stimuli, negative controls/blank testing, and various scenarios in its regular training regimen.

The greatest measure of the team's reliability can be found in documents reflecting the team's regular maintenance training, and results from proficiency assessments and certification.

PREPARING FOR COURT

It is recommended that the handler make available to the attorney handling the matter relevant documentation regarding the detector/scent dog team in a timely fashion. The documentation should include updated copies of the team's resume, maintenance training records, results from proficiency assessments, certification, deployment/utilization logs, including confirmed case results, seizure logs, and any reports that may have been prepared concerning the team's participation in the investigation. If a person other than the handler is testifying as an expert in the case, the expert should provide his/her resume to the attorney handling the matter and review all relevant materials prior to his or her testimony.

It is generally desirable for the handler/expert to meet with the attorney handling the matter before he/she testifies in court to discuss the training and experience of the detector/scent dog team/expert, the circumstances of the case, and the team's participation in the case. The handler/expert should be prepared to discuss at length not only the dog's training and experience, but also his/her own training, education and experience, both in the classroom and the field. Adequate time before the hearing should be set aside for this meeting.

It is not unusual to encounter attorneys who have little to no experience in the area of dog related evidence. It is therefore useful for the handler/expert to have a list of routine foundational questions that are commonly asked in court relating to the qualifications of the expert and detector/scent dog team, the team's participation in the investigation, including collection, handling, and storage procedures that may have been utilized in any given case. A sample list of questions may be found in the attached appendix. The handler/expert should be prepared to address what

questions or objections may be expected from opposing counsel during the expert's presentation and discuss them with the attorney handling the matter.

QUALIFYING AS AN EXPERT

Most dog handlers will qualify to testify as an expert as long as the handler can demonstrate sufficient training, education and experience in the targeted task (i.e. tracking, drug detection). It is not unusual, however, for other professionals to testify as experts (i.e. scientists) in this area. Such an expert should be thoroughly familiar with the materials submitted by the dog handler.

Experts draw their expertise from a broad mix of education, training, and experience, and attorneys should try to bring out all three. Having acceptable technical qualifications allows the expert to testify in the form of an opinion and the attorney's role in court is to persuade the fact finder to give credence to the opinion. In this context, demonstrating that an expert is a specialist in the narrow issue before the court is more persuasive than just listing broad qualifications, no matter how impressive they may be.

1. General Qualifications for Experts
   1.1. General qualifications
   1.2. Specialized knowledge or skill (existing degrees, honors, licenses, practical training, years of experience, relevant teaching and writing, publications, professional internships or apprenticeships, duration of professional practice, and experience in the specific area that helps render the witness competent to offer an authoritative opinion on the subject matter at issue)
   1.3. Offices and memberships in professional societies
   1.4. Previous experience as an expert witness
   1.5. Practical experience
   1.6. Certification (explain and amplify what such certification means and what it took to obtain it)
   1.7. Continuing professional training outside the job, and continuing task-related activities
   1.8. Relevant professional activities

PREPARING FOR EXPERT TESTIMONY IN COURT

1. When called as an expert witness, the handler/expert should be prepared to address the following areas in court:
   1.1. The handler/expert is thoroughly familiar with the dog related scent materials in the possession of the attorney handling the matter and is able to recite from memory detailed aspects of such materials.
   1.2. The handler/expert conducted a detailed analysis of the materials, together with the dog's participation in the case.
   1.3. The handler/expert is prepared to render an opinion concerning the detector/scent dog team's reliability and provide the basis for such opinion.

1.4. The handler/expert should consider preparing visual aids in order to illustrate the nature of the case (i.e. diagram of a track/trail), as well as any other aspect of the subject matter before the court.

2. A scientific expert shall be thoroughly familiar with and be able to reference the latest literary sources and scientific findings (*such as, quantitative data, results of experiments, etc.*) to support the expert's reasoning and opinion.

If the Court excludes witnesses from the courtroom, this means that, until excused as a witness, all witnesses will remain outside the courtroom except when testifying. The witness should wait in the areas directed by the bailiff unless other arrangements have been made with the attorney who has called them. This rule also forbids witnesses from telling anyone but the attorney what they will testify about or what they have testified to. If witnesses do talk to the attorney about their testimony, they should do so outside the presence of other witnesses and jurors.

ENTERING THE COURTROOM

Always dress in a manner showing proper respect for the court. Business attire/duty uniform is appropriate. Employing the proper dress code may accomplish more in conveying your participation in the investigation than pages of even the best written documentation. The impact of the expert's opinion starts from the moment he/she enters the courtroom ('first impression').

1. The handler/expert should be cognizant of the following when testifying in court:
    1.1. Method of courtroom presentation **-** responses should be brief and concise; when receiving a question look at the attorney asking the question; when giving an answer look at the jury or the attorney who posed the question.
    1.2**.** Pace of speech **-** in general, the pace of speech should be relatively normal; avoid speaking too quickly; your testimony should not seem 'rehearsed' or 'memorized'; you should be relaxed and natural.
    1.3. Voice modulation - to emphasize the most important aspects of your testimony it often makes sense to use voice modulation or to pause before the most important statements. This allows the court and jury to focus on the expert and the information being delivered.
    1.4. Vocabulary - when possible, avoid specialized canine industry terminology and/or technical terms unless an explanation in layman terms is provided.
    1.5. References to literature **-** it is often necessary and helpful to make reference to literature and scientific studies to support certain statements and/or the expert's opinion. If referencing such materials, it is critical to be accurate.
    1.6. References to own experience/experiments – any experiments should have a sound scientific basis.
    1.7. Always be familiar with and have a thorough knowledge of the factual aspects of the case at hand. Your answers are important and should be based on your knowledge of the case.

APPENDIX

1. Suggested direct examination questions of handler/expert
2. Compilation of state and federal human scent cases
3. Compilation of state and federal substance detection cases

Appendix 7 – Research & Technology

SWGDOG SC7 – Research & Technology
Posted for Public Comment 1/3/07 - 3/3/2007. Approved by Membership 3/12/2007.

Statement of Purpose:

The mission of the SWGDOG subcommittee on Research and Technology is to identify research and technological approaches, topics, and findings that are relevant to the detection canine and orthogonal detector (primarily instrumental detection) communities. This subcommittee is also charged with identifying areas in need of engagement by the scientific community and topics that should be the focus of the next generation of research efforts. The Research and Technology Subcommittee serves as a clearinghouse for the available scientific literature regarding detector dogs and orthogonal detectors making available a searchable database of up-to-date publications and encouraging research in areas where gaps exist in the knowledge base or detection capabilities. In addition, this subcommittee will utilize the latest scientific information to make recommendation on best practices to other SWGDOG subcommittees. In the course of its work, this subcommittee will identify topics that need clarification and those that would benefit from a newer, more scientific approach. Research on various topics is expected to focus on facilitating all aspects of detection work and increasing cost-effectiveness of the relevant programs. Additionally, this subcommittee will outline key research concerns and, or project areas with the intent of establishing potential collaborative relationships between researchers and operational personnel, and identifying potential areas of funding.

1. **RECOMMENDED RESEARCH**

   Below are recommended research topics based on feedback from the community and SWGDOG members and review of the available literature. The following topics are proposed and rated for the desirability of research and potential funding allocation using the following criteria: CRITICAL (potential mission stoppage); ESSENTIAL (can still do the job but this makes it better); ENHANCING (job can still be done but this is nice to have around) or DESIRABLE (wish list). ***This four-point rating scale was added after the public comment period and thus SWGDOG is particularly interested in public comments on the proposed ratings as well as comments on additional areas to be included. Please submit comments at www.swgdog.org.***

   1.1 Identification/quantification of target odorants. This area focuses on identifying chemicals available to canines from target materials under different conditions and developing and critically evaluating surrogate

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continuation aids (also referred to as pseudos, simulants, calibrants, mimics) with similar physicochemical properties to real target materials.

    1.1.1. Identification of odorant chemicals present in and above targets (particularly human remains, explosives and drugs) including novel applications (chemical, microbes, etc.). ESSENTIAL

    1.1.2. Evaluation of changes in odorant(s) over time and environmental conditions. ENHANCING

    1.1.3. Evaluation of changes in perception of the odor as a function of changes in concentration of the odorant(s). ENHANCING

    1.1.4. Evaluation of optimal storage and handling practices (including containers) to prevent cross-contamination of training aids. ESSENTIAL

    1.1.5. Development of methods for monitoring levels of contamination of aids. Identify when training aids are contaminated, how long it takes to dissipate the contamination odor off the pure odor training aid. CRITICAL

    1.1.6. Identification of odor chemicals in non target materials that can potentially trigger false alerts (particularly for drugs, explosives and humans remains). ENHANCING

    1.1.7. Evaluation of dissipation of odorant(s) after removal of targets. How soon can you reuse an area – time for dissipation/ decomposition of residual odors? ESSENTIAL

    1.1.8. Develop a scientifically valid odor list for testing detector dogs (particularly explosives). CRITICAL

    1.1.9. Development of reliable surrogate continuation aids (particularly for drugs, explosives and human remains). These must provide controlled delivery of chemicals to allow for an assessment of threshold variance, but not to be used for certification purposes. (canine and possibly equipment calibration). This also pertains to emerging threats. CRITICAL

1.2. Research on olfaction- Focused on laboratory research, either chemical or behavioral. For example, the question regarding the limitation of tracking would best be considered under "dog performance" and not under olfaction. (as supporting section 1.1)

    1.2.1. Development of aids ENHANCING

        1.2.1.1. Identifying the optimal numbers, amounts and identities of target odors (particularly for explosives and human remains).

        1.2.1.2. Test improved training aids/proficiency test delivering reliable controlled odor amounts (critical evaluation between training aids and real materials).

        1.2.1.3. Develop and scientifically validate non-hazardous training materials. Minimize risks and provide reliable amounts of target odors.

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1.2.1.4. Determine the ability to trap and release target odors for collection materials and develop "intelligent" materials that are odor specific.

1.2.2. Determination of thresholds ENHANCING

1.2.3. Comparison of detectors ESSENTIAL

1.2.3.1. Critical comparisons of capabilities of certified detector dogs and electronic noses to reliably detect target odors in the presence of interfering (distractor) odors.

1.2.3.2. Quantifying cost effectiveness of canine search teams over human searchers (with and without using instruments).

1.2.3.3. Comparison of standoff capabilities of canines and instrumentation

1.2.3.4. Listing of complementary instrumentation for application with canines.

1.2.3.5. Comparison of dogs to other biological detection entities.

1.3. Research on Learning. This section will include actual experimentation on training methodologies, types of reinforcement, relationship between training and operations performance and questions on generalization and concept formation. The following topics are proposed: ENHANCING

1.3.1. Research on the effectiveness of training aids. Does extensive experience with the training aid help or hinder the later detection of the real odor? CRITICAL

1.3.2. What is the optimal way to utilize training aids? Start easy (e.g., most volatile) or start hard (e.g., least volatile). Start with mixture of odors ("cocktail" or "beef stew" approach) or with individual odors. ESSENTIAL

1.3.3. Masking effects and training to overcome them. ESSENTIAL

1.3.4. Memory for previously trained odors. DESIRABLE

1.3.5. Effects of extinction on olfactory search and detection. ESSENTIAL

1.3.6. Context effect. ENHANCING

1.3.7. Search images (history: define in more detail). ESSENTIAL

1.3.8. Generalization versus concept formation on the response to novel odors. ESSENTIAL

1.3.9. Reinforcement effects, the effects and side effects of negative reinforcement. DESIRABLE

1.4.9.1. Food versus Play reinforcement. Increasing selection pool

1.3.10. Effects of reinforcement schedules on performance. ESSENTIAL

1.3.11. Effects of odor quantity on detection. Is there really a difference in training on 10 g. of TNT versus 10000 g. of TNT? And if so, what and why? ENHANCING ESSENTIAL

1.3.12. Effects of additional cues on target detection (such as the odor of the human placing the target and the odor of newly dug holes). ESSENTIAL

1.4. Dog Performance – An important goal when training working dogs is to determine the performance envelope of the dogs so that there is a correct understanding of their capabilities and limitations. Only when we know how the dogs are presently working will we be able to determine the effectiveness of new manipulations. Basically, the goal is to obtain a clear understanding of how the current working dogs actually work and what variables affect their probability of detection. Some of the most important variables to be considered in this topic are:

   1.4.1. Environmental variables ENHANCING
      1.4.1.1. Temperature and humidity
      1.4.1.2. Type of terrain
      1.4.1.3. Effects of wind and rain
      1.4.1.4. Effects of time since target was planted.
      1.4.1.5. Effects of target micro-niche, buried, in trees, under water etc. (With a focus on interactive effects)
      1.4.1.6. Characterization of structures of odor plumes
   1.4.2. Behavioral variables ENHANCING
      1.4.2.1. Maximum and optimal search time
      1.4.2.2. Effects of target density
      1.4.2.3. Effects of knowledge of the area being searched, previous experience in the same area
   1.4.3. Trainer/handler variables ENHANCING
      1.2.3.1. On versus off-leash for the probability of detection
      1.2.3.2. Reinforcement history
   1.4.4. REST/RASCO/MEDDS etc. (Remote Explosive Scent Tracing). Independent scientific evaluations of the capabilities and limits of the REST systems. ESSENTIAL
   1.4.5. Physical and physiological function of the dog as related to performance. ESSENTIAL

1.5. Selection, Development, and Early Experience. This is a somewhat related collection of topics. The overall goal is to determine how to optimize the development of detector dogs. Suggested topics include:

   1.5.1. Early olfactory experience and later detection of that odor ENHANCING
   1.5.2. Does environmental enrichment help prepare dogs for harsh and different environments? ENHANCING
   1.5.3. Rearing in a kennel versus home environment- which is better? DESIRABLE
   1.5.4. What is required during development to get a good working dog? ESSENTIAL

1.6. Veterinary issues
   1.6.1. Orthopedic problems DESIRABLE
   1.6.2. Breed problems etc. DESIRABLE

1.6.3. Evaluation of transmitting thermometer to determine heat stress in dogs. One handler/supervisor can immediately see on a receiver the internal body temperature of all the dogs and determine if any are becoming hyperthermic or hypothermic. ENHANCING

1.7. Human scent

1.7.1. Determine the optimal materials and procedures for the collection and storage of human scent. CRITICAL

1.7.2. Quantify the influence of environmental factors (particularly time) on human scent composition and detection (incorporate into optimize training protocols). ESSENTIAL

1.7.3. Evaluate which chemicals make human scent unique and the influence/correlation to state of health and genetic factors (MHC influence). ENHANCING

1.7.4. Evaluate what components of human scent dogs use to detect live humans. ENHANCING

1.7.5. Quantify the amount of human scent required for dogs to trail and to identify. ENHANCING

1.7.6. Conduct critical evaluations of the limitation of human scent dogs (aged trails, versus fresh trails, no scent article, large contamination) CRITICAL

1.7.7. Evaluate the difference between live and deceased human scent and the timing and chemicals characteristic of human remains. ENHANCING

1.7.8. Critically evaluate contamination issue (If humans shed skin cells 24/7 from their entire bodies, for example, does a pair of gloves stop the human odor from transferring to the training aids?) CRITICAL (also included in the training aids section)

2. POTENTIAL FUNDING SOURCES

The table below lists some potential funding agencies including contact persons and the foci/interests of the agencies.

Agency	Website	Foci
NIJ	www.ojp.usdoj.gov/nij	State & Local Law Enforcement
TSWG	www.tswg.gov	Combating terrorism
DARPA	www.darpa.mil	Stealthy sensors
NIH	www.nih.gov	Basic science
HSARPA	http://www.hsarpasbir.com	Security/First responders
CBP	http://www.cbp.gov	Customs and border protection
ONR	http://www.onr.navy.mil	Warfare and combating terrorism
DHS/S&T	www.dhs.gov/scienceandtechnology	Technology to protect the

APPENDIX 7-1 - DATABASE OF PUBLISHED LITERATURE

Using a collect list of key words and topic areas, a detailed literature database has been constructed using Reference manager and will be made available on www.swgdog.org. The database includes reviewed journal articles, edited chapters and technical reports with explanation of how these reports may be requested. There will also be a selected list of books focusing on those with an underlying scientific basis and detailed references.

Appendix 8 – Accelerant Dogs

SWGDOG SC8– Substance Detector Dogs
Accelerant Detection
Posted for Public Comment May 10th – July 8th, 2007

Statement of purpose: **To provide best practice guidelines for training, certification and documentation pertaining to accelerant detector canines.**

1. **Initial Training**
   1.1. The training shall be conducted by a qualified accelerant detector canine team trainer.
   1.2. The training course shall include the training of the accelerant detection canine on the accelerants listed in Section 2.1.2 below. Specific accelerants within each class shall be selected from listings published by national organizations such as the Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF) and the American Society of Testing and Material (ASTM).
   1.3. The training shall include varying quantities (typically varying by orders of magnitude) of the various substances both burned and unburned. Those substances are dependent on the region and mission and operational deployment needs.
   1.4. The training shall include exposing the canine to various heights and depths of training aid placement in different training scenarios.
   1.5. Initial training shall represent all conditions that could be encountered during a certification process.
   1.6. The initial training shall continue until the accelerant detection canine team is certified or deemed not certifiable.

2. **Canine/Handler Team Certification:**
   2.1. Parameters of certification test
      2.1.1. Certification shall not be on quantities less than the limit of quantification of an accredited laboratory. Typically no less than 1 microliter on a clean (unburned) matrix (i.e., tissue, paper towel) and no less than 10 microliters on a burnt matrix.
      2.1.2. The canine shall be tested on accelerant from the following classes.
         2.1.2.1. Gasoline
         2.1.2.2. Light petroleum distillates
         2.1.2.3. Medium petroleum distillates
         2.1.2.4. Heavy petroleum distillates
      2.1.3. The test shall include scenarios resembling searches within the normal operational environment and include at least 4 different searches (see categories below) designed to evaluate the canine's

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ability to recognize the odor, respond to the odor and the handler's ability to recognize this response. All odors for which the dog will be certified must be tested but not all odors will necessarily be in each type of search and some searches shall contain no odors (blanks). The recommended maximum time to complete an individual search is listed below but disqualification due to time shall be left to the discretion of the certifiers. The test shall end if the certifiers determine that the dog/handler team is no longer working (e.g., *Observable behaviors to be added in final annotated version*). If using fewer odors in a particular scenario, more replications of each odor are needed as listed below (e.g., if the test involves only 2 odors, 4-6 articles / odor should be used to increase the reliability).. At least one of these searches shall include spiked and un-spiked burnt materials. Search types and suggested search times include:

2.1.3.1. Articles (i.e., clothing)/Baggage/Parcels: 2-6 articles per odor, searching 2-6 bags per minute.

2.1.3.2. Person and or Crowd Search: 2-6 persons per odor, searching 1 minute per person.
Building/Room search: 1 room (including furniture) per odor for rooms of 200-1200 sq. ft.. Search time should approximate 1.5 minute per 100 sq.ft./1000 cu. ft..

2.1.3.3. Motor vehicles: including interiors and exteriors of passenger cars and trucks, 2-6 vehicles per odor, spending 3 minutes per vehicle.

2.1.3.4. Open Area/Perimeter: search 1,000-10,000 sq. ft. per odor, spending 1-3 minutes per 1000 sq. ft..

2.1.3.5. Odor Recognition/Mixed Matrix test: search 2-6 cans (from 1 quart-1 gallon size cans) for each odor, spending 1 minute per can.

2.1.3.6. Sample Location/Pinpoint accuracy test: 1 odor per foot, 1 minute per odor.

2.1.4. The canine team shall meet the minimum standard of 90% as outlined in the SWGDOG General Guidelines.

2.1.4.1. The components built into the certification standards include the following (to be expanded):

2.1.4.1.1. Positive Indication

2.1.4.1.2. False Indication rates shall not be excessive (less than 10%).

2.1.4.1.3. Non Indication

2.1.4.1.4. Handler Errors, team may fail as a result of excessive handler errors

2.2. Use of distracters

2.2.1. Natural distracters are normally present and vary depending on the certification area.

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2.2.2. Placing artificial distracters in the certification area is acceptable, but not mandatory.

2.2.3. Care must be taken not to place artificial distractions in a manner that causes them to be contaminated with the test substance odor.

2.3. Certification for accelerant detection dogs shall be comprised of a comprehensive assessment, which includes elements of odor recognition as outlined in SWGDOG General Guidelines.

2.4. Certification scenarios shall be varied from one certification to the next.

3. Maintenance Training

3.1. This type of training is meant to improve and enhance the performance of the handler, canine and the canine team.

3.2. In training, challenging situations are purposely sought because there is much one can learn even when mistakes are made.

3.3. Teams shall be challenged to improve and enhance their abilities.

3.4. Training shall include:

3.4.1. A variety of locations, environments and times of day

3.4.2. A variety of training aid amounts

3.4.3. A variety of heights, depths, containers and distraction odors.

3.4.4. A variety of types of searches (i.e., article, building, vehicle, open area, odor recognition)

3.4.5. A variety of search time durations

3.4.6. A variety of blank searches

3.4.7. Materials that have been burnt to varying degrees

3.5. The canine team shall conduct regular objective-oriented training sufficient to maintain operational proficiency:

3.5.1. Routine training, conducted solely by the handler to maintain the dog's proficiency and to reinforce odor recognition, is an acceptable form of training but must be combined with supervised training on a frequent basis.

3.5.2. Supervised training is conducted by a qualified trainer other than the handler and is the best approach to improve performance and identify and correct training deficiencies and perform proficiency assessments.

3.6. Maintenance training shall represent all conditions that could be encountered during a certification process.

4. Training aids (accelerants)

4.1. All training will be done on actual accelerants.

4.2. Training accelerants shall be packaged and labeled in a manner safe for both the handler and canine throughout the training process.

4.3. Training accelerants shall be maintained in a manner to avoid loss or destruction.

4.4. Storage of training accelerants shall be in a manner to prevent odor contamination or physical contamination, i.e., the aids shall be stored in separate containers.

4.5. The source of the training aids shall be reliable and documented.

4.6. Security of the training aids shall follow local, state and federal guidelines.

4.7. Disposal or destruction of the training aids shall follow local, state, and federal guidelines.

5. **Documentation**

5.1. The handler, organization, and or agency shall maintain records of the following types: proficiency assessment, and seizure and/or deployment/utilization records. Documents indicating timed performance are relevant.

5.2. Records shall contain the following.

   5.2.1. Training records

      5.2.1.1. Date and time

      5.2.1.2. Name of trainer

      5.2.1.3. Type and amount of training aid used

      5.2.1.4. Depth or height of hide

      5.2.1.5. Location of training

      5.2.1.6. Type of training (e.g., vehicle, luggage, building, open area)

      5.2.1.7. Training objective and outline of the training scenario results

      5.2.1.8. Additional information may include: weather conditions, light conditions

      5.2.1.9. Outcome of training

      5.2.1.10. Name of canine and handler

      5.2.1.11. Method used to extinguish fire (if applicable)

      5.2.1.12. Other information required by the organization and/or agency

   5.2.2. Certification records (Certifying authority and Handler)

      5.2.2.1. Date certified

      5.2.2.2. Certification authority i.e., agency, professional organization

      5.2.2.3. Name of certification individual

      5.2.2.4. Type of materials

      5.2.2.5. Location of certification

      5.2.2.6. Name of canine and handler

   5.2.3. Deployment and utilization records

      5.2.3.1. Date and time

      5.2.3.2. Location of deployment

      5.2.3.3. Length of search

      5.2.3.4. Description of activity

      5.2.3.5. Results

5.2.3.6. Other information required by the organization and/or agency

6. Use of records and documentation

6.1. Reliability of the canine team shall be based upon the results of certification and proficiency assessments.

6.2. Training records do not necessarily reflect reliability.

6.3. Training records are necessary to illustrate the type and amount of training that the team has experienced before and after certification.

6.4. Confirmed operational outcomes can be used to determine capability.

6.5. Unconfirmed operational outcomes shall not be used to determine capability in that they do not correctly evaluate a canine team's proficiency

Appendix 9 – Agriculture Dogs

SWGDOG SC8– Substance Detector Dogs
Agriculture Section
Posted for Public Comment May 10th – July 8th, 2007

Statement of purpose: To provide recommended guidelines for training, certifying and documenting the performance of agriculture canine teams.

1. **Initial Training**

   1.1. Training shall be conducted by a competent, qualified detector canine trainer from an entity which utilizes a structured curriculum with specific training and learning objectives.

   1.2. The training course shall include the training of the detection canine on agricultural materials deemed to be high risk to agricultural interests. Additional materials can be trained as they are identified as potential threats to agribusiness.

   1.3. The training shall include varying concentrations of the target odors.

   1.4. The training shall include exposing the canine to various heights and depths of training aid placement in different training scenarios to simulate working environments.

   1.5. The initial training shall continue until the agriculture detection team is certified or deemed not certifiable.

   1.6. Initial training shall represent all conditions that could be encountered during a certification process.

2. **Canine/Handler Team Certification**

   2.1 Parameters of the test
   Certification should be conducted in accordance with SWGDOG General Guidelines utilizing the following parameters:
   2.1.1. The agriculture detector canine shall be tested on the substance odors on which the team was trained.
   2.1.2. The test shall be designed in a manner that resembles the normal operational searches in which the teams were trained and may include the following:
   2.1.2.1. Luggage (typically 50 to 75 pieces within 5 to 10 minutes).

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2.1.2.2. Vehicle searches with various types of vehicles (typically 3 to 4 vehicles in 7 to 10 minutes).

2.1.2.3. Parcel inspection (typically 100 to 150 pieces while on a moving conveyer belt).

2.1.2.4. Cargo (typically 15 to 20 pallets in 7 to 10 minutes).

2.1.3. The test shall include a variety of searches designed to evaluate the canines' ability to recognize the odor, respond to the odor, and the handler's ability to recognize the response.

2.1.4. The canine team shall meet the minimum standard of 80% positive responses for initial certification, and shall exceed 85% positive responses for annual certification for the discipline of agriculture canine scent detection.

2.1.4.1. The certification standards include the following components:

2.1.4.1.1. Positive responses

2.1.4.1.2. False responses

2.1.4.1.3. Non responses

2.1.4.2. Handler Errors, when excessive may result in failure of the team.

2.2. Distracters are necessary to prove goal is met.

2.2.1. Natural distracters are normally present in the testing area.

2.2.2. Placement of distracters in the certification area is required when no natural distracters are present and may include various non-target food items.

2.3. Certification for agriculture detection dogs shall be comprised of a comprehensive assessment. Additionally, certification shall include elements of odor recognition or double blind testing as outlined in SWGDOG General Guidelines.

3. Maintenance Training

3.1. Maintenance training is meant to sustain and enhance the performance of the handler, canine and the canine team.

3.2. In training, situations are created to simulate realistic environmental scenarios.

3.3. Maintenance training shall include:

3.3.1. A variety of locations, environments, times of day, durations of searches.

3.3.2. A variety of training material amounts or concentrations of odors.

3.3.3. A variety of heights, depths, containers and distraction odors.

3.3.4. A variety in the types of searches including vehicle, building, parcels, luggage, etc..

3.3.5. A varied duration of set times
3.3.6. A varied duration of search times.
3.3.7. A variety of environmental scenarios to include blank/negative exercises.

3.4. Because routine training is essential in order to maintain mission readiness, a canine team shall spend a minimum of 4 hours per week training.

3.4.1. Routine training, conducted by the handler to maintain the dog's proficiency and to reinforce odor recognition, is an acceptable form of training but shall be combined with supervised training on a regular basis.

3.4.2. Supervised Training is conducted by a qualified trainer, other than the handler. The goal is to improve performance, identify and correct training deficiencies and perform proficiency assessments and is considered a best practice.

3.5. If additional target materials are identified to meet mission specific requirements, then maintenance training shall be conducted on these materials.

4. Training Materials

4.1. Handling and storage of training aids shall be conducted in a manner to prevent odor contamination

4.1.1. Target materials shall be stored in separate labeled containers

4.1.2. Target materials shall be stored separately from non target and/or masking odors.

4.1.3. Training aid material shall be replenished and disposed of frequently and appropriately due to the perishable nature of the material.

5. Documentation:

5.1. The handler/department/organization shall maintain records for training, proficiency assessments, seizures, and deployment utilization.

5.2. Recommended training records shall contain the following:
5.2.1. Date
5.2.2. Name of individual conducting training.
5.2.3. Length of training.
5.2.4. Type and amount of training aid used.
5.2.5. Height or depth of hide.
5.2.6. Location of training.
5.2.7. Type of training.
5.2.8. Training objective.

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5.2.9. Results of training.

5.2.10. Any additional information required by the agency or organization.

5.2.11. Name of canine and handler.

5.3. Deployment / Utilization / Seizure Records

    5.3.1. Date and time

    5.3.2. Location

    5.3.3. Results

    5.3.4. Description of activity

    5.3.5. Seizure information

    5.3.6. Other information required by the organization and/or agency.

    5.3.7. Name of canine and handler

6. Use of Records/Documentation

6.1. Reliability of the canine/handler team shall be based upon the results of certification and proficiency assessments.

6.2. Training records do not necessarily reflect reliability of the team.

6.3. Training records are necessary to illustrate the type and amount of training that the team has experienced before and after certification.

6.4. Confirmed operational outcomes can be used to determine capability.

6.5. Unconfirmed operational outcomes shall not be used to determine capability in that they do not correctly evaluate a canine/handler team's proficiency

Appendix 10 – Explosives Dogs

SWGDOG SC8– Substance Detector Dogs
Explosives Detection
Posted for Public Comment June 3rd – August 1st 2007

Statement of purpose: **To provide recommended guidelines for training, certification and documentation pertaining to explosives detector canines.**

1. **Initial Training**

    1.1. The training shall be conducted by a qualified explosives detector canine team trainer who is a competent individual from an entity that utilizes a structured curriculum with training designed to achieve specific learning objectives.

    1.2. The training course shall include training to detect the following mandatory groups of explosives that contain (see Table 8.1 for details):
        1.2.1.   RDX (RDX based Det cord)
        1.2.2.   PETN (PETN based Det cord)
        1.2.3.   TNT (Military TNT)
        1.2.4.   Dynamite (containing EGDN and NG)
        1.2.5.   Black powder (free flowing , time fuse or safety fuse)
        1.2.6.   Double base smokeless powder

    1.3. Other substances may be included in the detection training as required by mission or specific threat: (see examples in Table 8.2)
        1.3.1. Ammonium Nitrate (prilled or powder, or the solid component of binary explosives)
        1.3.2. Black Powder substitutes (e.g., Pyrodex, Triple Seven)
        1.3.3. Blasting Agents
        1.3.4. Cast Boosters
        1.3.5. Composition B
        1.3.6. Emulsions
        1.3.7. Nitromethane
        1.3.8. Photoflash/fireworks/pyrotechnic powders
        1.3.9. Plastic explosives (unmarked and marked with detection agent)
        1.3.10. Semtex
        1.3.11. Single Based smokeless powder
        1.3.12. Slurries
        1.3.13. Tetryl
        1.3.14. Water gels

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1.3.15. Home Made Explosives (HME)
    1.3.15.1. Chlorate based mixtures (e.g., Potassium chlorate)
    1.3.15.2. Nitrate based mixtures (e.g., Anfo Nitrate)
    1.3.15.3. Perchlorate based mixtures (e.g., Potassium perchlorate)
    1.3.15.4. Urea nitrate
    1.3.15.5. Peroxide based explosives
        1.3.15.5.1. Due to the extreme instability of these explosive compounds, training must be conducted/supervised by a qualified chemist, bomb technician or explosives canine instructor.
            1.3.15.5.1.1.   Hexamethylene Triperoxidediamine (HMTD)
            1.3.15.5.1.2.   Triacetone triperoxide (TATP)
    1.3.15.6. Emerging Threats – Such as liquid explosives

1.4. Trainers and handlers shall be aware of whether or not the explosives they are using for training are tagged.

    1.4.1. Taggants – The antiterrorism and effective death penalty act of 1996 (Section 842 of Title 18, United States Code) mandated that as of April 24, 1997, all plastic explosives manufactured in the United States be marked with a chemical detection agent. The taggants are simply nitro compounds which vaporize rapidly and are added to enhance the detection of plastic explosives by instrumental analysis. Any plasticized high explosive (i.e., Detasheet, Flex X, Primasheet, C4, Semtex) legally manufactured after 4/24/97, contains taggants. They are listed below:
        1.4.1.1.1. EDGN (ethylene glycol dinitrate semtex discontinued in the mid-90's)
        1.4.1.2. DMNB (Dimethyl Dinitro Butane)
        1.4.1.3. o-MNT (Ortho-Mono nitrotoluene) less used Ortho-Mononitrotoluene (o-MNT)
        1.4.1.4. p-MNT (Para-Mononitrotoluene) Used by France and Russian

1.5. The training shall include varying quantities (typically varying by orders of magnitude) of the various substances (dependent on region, mission and operational deployment needs).

1.6. The training shall include exposing the canine to various heights and depths of training aid placement in different training scenarios.

1.7. The initial training shall continue until the explosives detection canine team is certified or deemed not certifiable.

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1.8. Initial training shall represent all conditions that could be encountered during a certification process.

2. **Canine Handler Team Certification**

2.1. Certification for explosives detection dogs shall be comprised of a comprehensive assessment and shall include elements of odor recognition or double blind testing as outlined in the SWGDOG General Guidelines.

2.2. Test Parameters
Certification shall be conducted in accordance with SWGDOG General Guidelines. The following parameters shall be utilized
   2.2.1.   The explosives detector canine shall be tested on the substance odors identified in section 1.2.
      2.2.1.1.   Recommended minimum quantities of substance odors for certification shall be no less than ¼ lbs (113.5g).
      2.2.1.2.   The following substances (examples shown) must be included in the test:
         2.2.1.2.1.   RDX (e.g. RDX based Det cord) other examples to be added
         2.2.1.2.2.   PETN (e.g. PETN based Det cord)
         2.2.1.2.3.   TNT
         2.2.1.2.4.   Dynamite (containing EGDN and NG)
         2.2.1.2.5.   Black powder
         2.2.1.2.6.   Double base smokeless powder
      2.2.1.3.   Recommended optional substances are listed in section 1.3 and may be included in the test based on mission specific requirements.
   2.2.2.   As a minimum, the test shall include the following components:
      2.2.2.1.   Scenarios resembling searches within the normal operational environment
      2.2.2.2.   At least 4 different searches (see categories including additional test areas below) designed to evaluate the canine's ability to recognize the odor, respond to the odor and the handler's ability to recognize this response (3 search areas must be from 2.2.2).
         2.2.2.2.1.   Parcels/Baggage (2-6 articles per odor, 2-6 parcels/bags per minute)
         2.2.2.2.2.   Building/room search, of a 200 -1200 sq ft room with furniture, 1 room per odor. Should take 1.5 minutes or less to search 100 sq ft or 1000 cu ft in.
         2.2.2.2.3.   Motor vehicles, both interiors and exteriors of passenger cars and trucks, using 2-6 vehicles per odor. Search time: 3 min per vehicle.

2.2.2.2.4.   Open area and perimeter searches of 1,000 to 10,000 sq ft per odor. Search time: 1-3 minutes per 1000 sq ft.

2.2.2.3.   All odors for which the dog will be certified must be tested but not all odors will necessarily be in each type of search and some search areas shall contain no odors (blanks).

2.2.2.4.   The recommended maximum time to complete an individual search is listed below but disqualification due to time shall be left to the discretion of the certifiers.

2.2.2.5.   The test shall end if the certifiers determine that the canine team is no longer working (e.g., Observable behaviors to be added).

2.2.2.6.   If fewer odors are being tested in a particular scenario, use more replications than those listed in the general numerical guidelines below.

2.2.3.   Additional test areas based on mission requirements and unique environments may include, but are not limited to the following:

2.2.3.1.   Aircraft

2.2.3.2.   Maritime vessels

2.2.3.3.   Mass transit vehicles including buses, light rail cars and subway cars

2.2.3.4.   Large cargo configurations

2.2.3.5.   Person/Crowd Search (3-6 persons per odor, 1 minute per person)

2.2.3.6.   Odor Recognition test (3-6 cans/containers per odor, 1 minute per can/container)

2.2.4.   Minimum weight of substance being tested – ¼ pound (113.5 grams)

2.2.5.   Maximum weight of substance being tested -- to be determined by the evaluator based on mission requirements and associated threat quantities

2.2.6.   Maximum height of hide – 8 ft

2.2.7.   Maximum depth of hide – 1 ft

2.2.8.   Minimum set time – 30 min or to be determined by the evaluator based on mission requirements and associated threat quantities

2.2.9.   The test shall include a variety of searches designed to evaluate the canine's ability to recognize the odor, respond to the odor and the handler's ability to recognize this response.

2.2.10. Training aids shall not be placed in plain sight.

2.2.11. The canine team shall meet the best accepted practice of 90% (see SC-2) as outlined in the SWGDOG General Guidelines.

2.2.11.1.   The components built into the certification standards include the following:

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2.2.11.1.1. Positive Indication
2.2.11.1.2. False Indication
2.2.11.1.3. Non Indication
2.2.11.2.   A team may fail as a result of excessive handler errors
2.2.11.3.   False response ratios shall not exceed 1 response per 10 items (i.e., bags, parcels) used in a certification. No more than 2 per operational search. (further refinement based on size of area)

2.3. Use of distracters
   2.3.1. Natural distracters are normally present and vary depending on the area where the certification testing is done.
   2.3.2. Placement of distracters in the certification area is required when no natural distracters are present.
   2.3.3. Care must be taken not to place artificial distractions in a manner that causes contamination with the test substance odor.

2.4. Deliberate compromise of an evaluation will not be tolerated. Any communication (in person, by cell phone, two way pager, text messaging or by any other means) between handlers/department personnel participating in the evaluation, concerning specifics of an area still being evaluated, placement of explosives training aids or any information that could be regarded as a compromise prior to the termination (by the evaluator) will constitute a compromise of the evaluation. In the event a handler compromises the evaluation, the handler will not be allowed to continue and may be removed from the evaluation.

3. **Maintenance Training**

3.1. This type of training is meant to sustain and enhance the performance of the handler and canine and their ability to work together as a team.

3.2. In training, situations are purposely sought where the capabilities of the canine team are challenged within the operational environments for which the team may be deployed.

3.3. Training shall include:
   3.3.1. A variety of locations, environments and times of day
   3.3.2. A variety of training aid amounts and odors expected to be found within the operational environments
   3.3.3. A variety of heights, depths, containers and distraction odors
   3.3.4. A variety of types of searches (vehicles, building, parcels, luggage, open area)
   3.3.5. Variation in the duration of the searches

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3.3.6. A variety of blank searches

3.4. The canine team shall conduct regular objective-oriented training sessions sufficient to maintain operational proficiency.

    3.4.1. Routine training, conducted solely by the handler to maintain the canine team's proficiency and to reinforce odor recognition, is an acceptable form of training but must be combined with supervised training on a regular basis. Supervised training conducted by a qualified trainer other than the handler, in order to improve performance, identify and correct training deficiencies and perform proficiency assessments (refer to SC-1) is considered a best practice.

    3.4.2. A minimum of 4 hours per week shall be spent in routine training for a canine team in order to maintain mission readiness.

3.5. Maintenance training shall represent all conditions that could be encountered during a certification process.

4. Training Aids

4.1. Every effort shall be made to train on actual explosives and chemicals used in the making of explosives.

4.2. The training aids shall be stored in accordance with local, state and federal regulations.

4.3. Training aids shall be labeled and packaged in a manner safe for the handler and canine.

    4.3.1. Each Label shall contain at least the following information

        4.3.1.1. Training aid tracking codes - *not* actual aid names

            4.3.1.1.1. Training aid tracking codes shall be cross referenced to a reference log maintained within the respective agency.

            4.3.1.1.2. Information contained within the log shall contain but not be limited to the following: description of aid, date acquired, quantity

        4.3.1.2. Emergency Contact Information

4.4. The training aid shall be maintained and handled in such a manner to avoid loss, spillage, or destruction.

4.5. Storage of training aids shall be in a manner to prevent odor cross contamination or physical contamination, i.e., each training aid substance shall be stored in separate containers.

4.5.1. To avoid contamination of training aids use:

4.5.1.1. Special storage and handling for Nitroglycerine based dynamite

4.5.1.2. Separate storage for bulk explosives and training aids

4.6. The source of the training aids shall be reliable and documented.

4.7. Disposal and or the destruction of the training aids shall follow federal, state and local regulations.

4.8. Transportation & vehicle storage of training aids shall follow local, state and federal guidelines.

4.9. Material Safety Data Sheets (MSDS) must be available for each material utilized.

5. Documentation

5.1. The handler, department, and organization shall maintain training records, training materials, proficiency assessments, seizure records, and/or deployment and utilization records.

5.2. Records shall contain discipline-related specifics.

5.3. Records shall be standardized within the department, agency and/or organization.

5.4. Documents shall be retained in accordance with federal, state and unit guidelines. Records shall contain but are not limited to the following:

5.4.1. Training records shall include:

5.4.1.1. Date and time training took place

5.4.1.2. Name of trainer

5.4.1.3. Type and amount of training aid used

5.4.1.4. Length of training session

5.4.1.5. Location of training

5.4.1.6. Type of training (e.g., vehicle, luggage, building, open area)

5.4.1.7. Searches and indications

5.4.2. Certification records (kept by Certifying authority and Handler)

5.4.2.1. Date certified

5.4.2.2. Certification authority i.e., agency, professional organization

5.4.2.3. Name of individual awarding certification

5.4.2.4. Type of materials for which certification granted

5.4.2.5. Location of certification

5.4.2.6. Name of canine and handler
5.4.3. Deployment/utilization
5.4.3.1. Date and time
5.4.3.2. Location of deployment
5.4.3.3. Length of search
5.4.3.4. Description of activity
5.4.3.5. Results
5.4.3.6. Other information required by the organization and/or agency

6. Use of records/documentation

6.1. Reliability of the canine team shall be based upon the results of certification and proficiency assessments.

6.2. Training records do not necessarily reflect reliability.

6.3. Training records are necessary to illustrate the type and amount of training that the team has experienced before and after certification.

6.4. Confirmed operational outcomes can be used to determine capability.

6.5. Unconfirmed operational outcomes shall not be used to determine capability in that they do not correctly evaluate a canine team's proficiency

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Appendix 11 – Narcotics Dogs

SWGDOG SC8– Substance Detector Dogs
Narcotics Section
Posted for Public Comment May 10th – July 8th, 2007

Statement of purpose: **To provide recommended guidelines for training, certification and documentation pertaining to** narcotic **detector canines.**

1. **Initial Training**

   1.1. Training shall be conducted by a competent, qualified narcotic detector canine trainer from an entity which utilizes a structured curriculum with specific training and learning objectives.

   1.2. The narcotic detection training course shall include training the canine to detect marijuana, cocaine, heroin, methamphetamine, and other substances as required.

   1.3. Training shall include varying quantities (typically varying by factors of ten) of the substances listed above which are dependent on region, mission and operational deployment needs.

   1.4. Training shall include exposing the canine to a variety of different types of searches and locations.

   1.5. The initial training should continue until the narcotic detection canine team is certified or deemed not certifiable.

   1.6. Initial training shall represent all conditions that could be encountered during a certification process.

2. **Canine/Handler Team Certification**

   2.1. Parameters of test
      2.1.1. The narcotic detector canine shall be tested on the substance odors for which it is trained.
      2.1.2. All odors for which the dog will be certified must be tested.
      2.1.3. The test shall be designed to resemble normal operational searches by using vehicles, buildings, parcels, luggage, etc. to conceal substances.

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2.1.4. Certification testing shall be conducted with no less than 5 grams of the actual substance to be detected.

2.1.5. The test shall include a variety of searches designed to evaluate the canine's ability to recognize the odor, respond to the odor and the handler's ability to recognize this response.

2.1.6. The test shall include scenarios resembling searches within the normal operational environment and include at least 3 different searches (see categories below) designed to evaluate the canine's ability to recognize the odor, respond to the odor and the handler's ability to recognize this response. Not all odors will necessarily be in each type of search and some search areas shall contain no odors (blanks). When testing on the lower range of possible odors in a particular scenario, more replications are required, as listed below (e.g, if the test involves only 2 odors, 4-6 articles / odor should be used to increase the reliability of the test).

  2.1.6.1. Parcels (2-6 articles per odor, 2-6 parcels per minute)

  2.1.6.2. Baggage (2-6 articles per odor, 2-6 bags per minute)

  2.1.6.3. Person/Crowd Search: as permitted by Federal and State law. (2-persons per odor, 1 minute per person)

  2.1.6.4. Building/Room search (1 room per odor, 200-1200 sq. ft. rooms with furniture, 1.5 minute per 100 sq.ft./1000 cu. ft.)

  2.1.6.5. Motor vehicles including interiors and exteriors (3-6 vehicles per search using passenger cars and trucks, 3 minutes per vehicle)

  2.1.6.6. Open Area/Perimeter (1,000-10,000 sq. ft. per search, 1-3 minutes per 1000 sq. ft.)

2.1.7. Disqualification due to time should be left to the discretion of the certifying authority. The test should end if the certifying authority determines that the dog/handler team is no longer working (e.g., Observable behaviors to be added in final annotated version).

2.2. Use of distracters

2.2.1. Natural distracters are normally present in the testing area.

2.2.2. Placement of distracters in the certification area is required when no natural distracters are present.

2.2.3. Care must be taken not to place artificial distractions in a manner that causes contamination of the test substance odor.

2.3. Proofing/Verification of certification area shall be conducted prior to the actual certification using a previously certified canine team who is not participating in the certification. This is done to verify that the trained odor is only present in the target locations.

2.4. Certification should not be conducted in areas in which narcotics detection canine teams have recently trained or certified.

2.5. Certification for narcotic detection dogs should be comprised of a comprehensive assessment, which includes elements of odor recognition as outlined in SWGDOG General Guidelines.

    2.5.1. Odor recognition assessment

        2.5.1.1. The handler shall be advised of the parameters of the search.

        2.5.1.2. The handler shall know the number of target objects, but not the placement.

        2.5.1.3. The evaluating official shall know the desired outcome of the search.

    2.5.2. Comprehensive assessment

        2.5.2.1. The handler shall be advised of the parameters of the search, yet shall not know the desired outcome.

        2.5.2.2. The handler shall not know the number or placement of the target objects.

        2.5.2.3. The evaluating official shall know the desired outcome of the search.

        2.5.2.4. The assessments shall include a blank search.

    2.5.3. Double-blind assessment

        2.5.3.1. No participant or observer present at the assessment location(s) shall be aware of the parameters of the search.

3. Maintenance Training

3.1. The canine team shall conduct regular objective-oriented training sufficient to maintain operational proficiency on all trained odors.

3.2. Training is meant to sustain and enhance the performance of the handler, canine and the canine team.

3.3. In training, situations are purposely sought where the capabilities of the canine team is challenged within the operational environments for which the team may be deployed.

3.4. Teams shall be challenged to improve and enhance their abilities.

3.5. Training shall include:

    3.5.1. A variety of locations.

    3.5.2. A variety of training material amounts (no less than 1 gram).

    3.5.3. A variety of heights, depths, containers and distraction odors.

    3.5.4. A variety of types of searches (e.g., vehicles, building, parcels, luggage, blank areas and persons depending on federal, state and local law).

    3.5.5. A varied duration of set times

3.5.6.　　　Varied duration of search times.

3.6. The canine team shall spend a minimum of 4 hours per week in routine training as training is essential in maintaining mission readiness.

3.7. Routine training, conducted by the handler to maintain the dog's proficiency and to reinforce odor recognition, is an acceptable form of training but shall be combined with supervised training on a regular basis. Supervised Training is conducted by a qualified trainer other than the handler, in order to improve performance, identify and correct training deficiencies. Performing proficiency assessments is considered a best practice.

4. Training Materials

4.1. The training materials shall be packaged in a manner safe for the canine throughout training.

4.2. The training materials shall be maintained in a manner to avoid loss or destruction.

4.3. Materials shall be stored in a manner that prevents odor contamination or physical contamination, i.e., the materials shall be stored in separate labeled containers.

4.4. Training materials shall be obtained from a reliable and documented source such as the DEA lab.

4.5. Required security procedures pertaining to the training materials shall be followed according to Federal, State and Local Guidelines.

4.6. Required substance registrations shall be current and accurate records maintained.

4.7. Training materials shall be rotated every 1-3 years, sooner if contaminated.

4.8. Disposal/destruction of the training aids shall follow Federal, State and Local Guidelines

5. Documentation

5.1. The handler/department/organization shall maintain training records, certification records, proficiency assessment and seizure records.

5.2. Deployment/utilization records may be kept in accordance with agency policy.

5.3. Records shall contain discipline-related specifics.

5.4. Records shall be standardized within the department, agency and/or organization.

5.5. Documents shall be retained in accordance with Federal, State and Unit guidelines. Records shall contain but are not limited to the following:
    5.5.1. Training records kept by the handler and/or the department.
        5.5.1.1. Date training held.
        5.5.1.2. Name of individual conducting training.
        5.5.1.3. Type and amount of training aid used.
        5.5.1.4. Length of training session.
        5.5.1.5. Location of training.
        5.5.1.6. Type of training (e.g., vehicle, luggage, building, open area).
        5.5.1.7. Number of searches and indications.
        5.5.1.8. Name of canine and handler.
    5.5.2. Seizure records kept by the handler.
        5.5.2.1. Date of seizure.
        5.5.2.2. Location of seizure.
        5.5.2.3. Length of search.
        5.5.2.4. Description of activity.
        5.5.2.5. Results.
        5.5.2.6. Name of canine and handler.
        5.5.2.7. Non-productive responses (i.e., dog alerts with no detectable or seizable amounts of narcotics).
        5.5.2.8. Seizure substance type
            5.5.2.8.1. Narcotics.
            5.5.2.8.2. Currency.
            5.5.2.8.3. Currency non-seizures.
        5.5.2.9. Other information as required by the organization and/or agency.
    5.5.3. Certification records (Certifying authority and Handler).
        5.5.3.1. Date certified.
        5.5.3.2. Certification authority i.e., agency or professional organization.
        5.5.3.3. Name of certified individual.
        5.5.3.4. Type of materials.
        5.5.3.5. Location of certification.
        5.5.3.6. Name of canine and handler.

5.6. Deployment/utilization/seizure information shall be kept separate from training and testing information.

5.7. Supervisory review is recommended.

5.8. Digital format is recommended to facilitate compiling and analyzing data.

6. **Use of records/documentation**

   6.1. Reliability of the canine team shall be based upon the results of certification and proficiency assessments.

   6.2. Training records do not necessarily reflect reliability of the team.

   6.3. Training records are necessary to illustrate the type and amount of training that the team has experienced before and after certification.

   6.4. Confirmed operational outcomes may be used to determine capability.

   6.5. Unconfirmed operational outcomes shall not be used to determine capability in that they do not correctly evaluate a canine team's proficiency

Appendix 12 – Non-Specific Human Scent Wilderness Area Search

SWGDOG SC 9 - HUMAN SCENT DOGS
Non-specific Human Scent Wilderness Area Search
Posted for Public Comment 6/3/07 – 8/1/07. Approved by the membership
8/15/07.

NON- SPECIFIC HUMAN SCENT WILDERNESS AREA SEARCHES
Non-specific human scent wilderness area searche**s** are used to locate lost people
and or fugitives in unpopulated wilderness areas through air scenting by a trained
canine/handler team. The goal of this type of search is for the canine/handler team
to utilize the wind, by way of air scenting, to search for and detect live people within
a defined search area. This differs from other types of searches where the canine
follows the target's foot track.

2. **CANINE/ HANDLER TEAM CERTIFICATION**

   2.1. Assessment parameters should be appropriate to operational
         requirements. Non-specific human scent wilderness area search canines
         can be deployed in a wide variety of circumstances.

   2.2. Odor recognition assessments will consist of the following characteristics:
         2.2.1. A test of the canine/handler team's skills as they relate to:
                 2.2.1.1. The handler's ability to organize and articulate a logical and
                           systematic search pattern utilizing the wind to the canine's
                           advantage.
                 2.2.1.2. The handler's ability to perform a systematic search with
                           the canine.
                 2.2.1.3. The handler's interpretation of the canine's behavior.
                 2.2.1.4. The canine/handler team's ability to locate all relevant
                           human targets.
                 2.2.1.5. The canine's ability to perform an effective independent
                           search without continuous handler guidance.
                 2.2.1.6.   The canine's response to a human target.
                 2.2.1.7. The handler's interpretation of the canine's response.
                 2.2.1.8. The canine's ability to ignore distractions.
         2.2.2. An odor recognition assessment consists of a single search.
                 2.2.2.1. The assessment shall occur in an environment similar to
                           where the canine usually works in daylight hours. Typically,
                           this is an   unpopulated environment where animals and
                           human scented objects   may be present.

2.2.2.2. The search area shall be approximately 20,234 m² (5 acres) in size.

2.2.2.3. One target shall walk into the search area in such a way to encourage the use of air scenting. The target shall hide in a stationary position, but not in an enclosed location (i.e., tents, caves, sleeping bags).

2.2.2.4. The target shall not be routinely or recently used as a target to train the canine.

2.2.3. For multiple assessments run consecutively, the target position shall be different for each assessment. It is recommended that a new search area is used for each team.

2.2.4. Set time and search time shall be determined by the certifying authority and shall be dependent on the terrain, vegetation cover, and by operational requirements. A typical search time for 20,235 m² (5 acres) would be under 30 minutes.

2.2.5. The assessor shall inform the handler of the search parameters which will include the area to be searched and the number of human targets to be located.

2.2.6. The handler shall decide to work with the canine on or off lead depending on the operational requirements, training, and trained canine response. The handler shall advise   the assessor of his or her decision. Should conditions necessitate a change in that decision, the handler shall notify the assessor what prompted the change to his or her original decision.

2.2.7. The handler must disclose the canine's response prior to the start of the assessment.

2.2.8. The handler shall demonstrate a logical, systematic search pattern utilizing the wind to the canine's advantage.

2.2.9. The assessor shall know the location of the target.

2.2.10. The canine must locate and alert on the target independently of specific directions from the handler.

2.2.11. Any false response constitutes a failure.

2.3. Comprehensive assessments examine a level of competence based on an average-sized search area. Larger search areas can be tested through proficiency testing. Comprehensive assessments will consist of the following requisites:

2.3.1. The objective of this assessment is to test the canine/handler team's skills as they relate to the following:

2.2.3.1. The handler's ability to set up a logical, systematic search pattern   utilizing the wind to the canine's advantage.

2.2.3.2. The handler's ability to perform a systematic search with the canine.

2.2.3.3. The handler's interpretation of the canine's behavior.

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2.2.3.4. The canine/handler team's ability to locate all relevant human targets.

2.2.3.5. The canine's ability to conduct a search pattern.

2.2.3.6. The canine's response to a human target.

2.2.3.7. The handler's interpretation of the canine's response.

2.2.3.8. The canine's ability to ignore distractions.

2.2.3.9. The handler's ability to conclude the search (no one left to find).

2.3.2. The assessment shall occur in an environment similar to actual search conditions (including day or night). Typically, this is an unpopulated environment where animal and human scented objects may be present.

2.3.3. The assessment area shall be between $0.16 \text{ km}^2 - 0.24 \text{ km}^2$ (40-60 acres) in size unless the certifying agency specifies a search area more appropriate to the regional terrain.

2.3.4. One to three targets shall walk into the search area in such a way as to encourage the use of air scenting. The targets may hide in a stationary

position, in an enclosed location (i.e., tents, caves, sleeping bags) or may be

moving as specified by the assessing agency, but shall not deliberately evade.

2.3.5. The targets shall not be routinely or recently used to train the canine.

2.3.6. The target positions shall be unique for each assessment. It is recommended that a new search area be used for each team.

2.3.7. Set time and search time shall be determined by the certifying agency and shall be dependent on the terrain, vegetation cover, and by operational requirements. Typical search times for 0.16 km^2-0.24 km^2 (40 - 60 acres) would not exceed two hours including rest periods.

2.3.8. The handler shall be provided with a map of the search area, but not the number of human targets to be located.

2.3.9. The handler shall decide to work with the canine on or off lead depending on the operational requirements, training, and trained canine response and shall advise the assessor of their decision. Should conditions necessitate a change in that decision, the handler shall notify the assessor regarding the reasons for the change.

2.3.10. The handler must articulate the canine's response to the assessor prior to the start of the assessment.

2.3.11. The assessor(s) shall know the location of the target(s).

2.3.12. The handler shall demonstrate a logical, systematic search pattern utilizing the wind to the canine's advantage.

2.3.13. If there are multiple targets, the handler shall restart at a location of their choosing to ensure efficient coverage of the search area.

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2.3.14. Once a target has been located, the certifying agency shall specify whether the target stays in place or leaves the area.

2.3.15. The canine must locate and should perform its trained final response on the target independently of specific directions from the handler.

2.3.16. Any false indication or non-find constitutes a failure.

2.3.17. The team must locate all targets.

2.3.18. The handler must be able to determine when there are no targets left to find.

2.3.19. At the conclusion of the search the handler shall document the following on the map provided: the area covered, and the number and position of all targets found.

2.4. Double-blind assessments demonstrate the proficiency of the canine/handler team in an operational setting.

2.4.1. A double blind assessment shall consist of a single search.

2.4.2. The assessment shall occur in an environment similar to where and when the canine usually works. Typically, this is an unpopulated environment where animal and human scented objects may be present.

2.4.3. The search area size shall depend on operational requirements.

2.4.4. The targets may hide in a stationary location, an observed location (i.e., tent, cave, sleeping bag), or may be moving, but shall not deliberately evade.

2.4.5. The target position(s) shall be unique for each assessment.

2.4.6. Set time and search time shall be determined by the certifying agency and shall be dependent on the terrain, vegetation cover, and by operational requirements.

2.4.7. The handler shall be provided with a map of the search area, but not the

2.4.8. Number of human targets to be located.

2.4.9. Neither the canine/handler, the assessor if used, nor any individual present

2.4.10. Shall know the correct outcome of any portion of assessment.

2.4.11. The handler shall decide to work with the canine on or off lead depending

2.4.12. On the operational requirements, training, and trained canine response and shall advise the assessor of his or her decision. Should conditions necessitate a change in that decision, the handler shall notify the assessor what prompted the change to his or her original decision.

2.4.13. The handler shall start at a location of their choosing.

2.4.14. If there are multiple targets, the handler shall restart at a location of their

2.4.15. Choosing to ensure total coverage of the search area.

2.4.16. The canine must locate and should perform its trained final response on the   target independently of specific directions from the handler.

2.4.17. Any false indication or non-find constitutes a failure.

2.4.18. The team must locate all target(s).

2.4.19. The handler must be able to determine when there are no targets left to find.

2.4.20. At the conclusion of the search the handler shall document the following on the provided map: the area covered, and the number and position of targets found.

2.4.21. The assessor shall compare the documented search results with the parameters of the search at the conclusion of the assessment.

Appendix 13 – Pre-scented Canine Searches

SWGDOG SC 9 - HUMAN SCENT DOGS
Pre-scented canine searches
Posted for Public Comment 6/3/07 – 8/1/07. Approved by the membership 8/15/07.

PRE-SCENTED CANINE SEARCHES

Pre-scented canine searches are ones in which the canine/handler team searches for and follows a specific person's odor trail over different surface types after the canine has been "scented" on an object containing the target's odor. The dog works from an article to either a person or a location associated with that person. The goal is for the canine to detect and follow the matching odor trail to the exclusion of all other odor trails which leads to a specific person and or location associated with that person, and correctly demonstrate the absence of a matching odor trail. These canines are used for finding a specific person and/or location associated with that specific person after scenting the canine on an object containing the target's odor.

3. CANINE/HANDLER TEAM CERTIFICATION

3.1. The odor recognition assessment shall contain the following:

    3.1.1. A test of the canine/handler team's abilities as listed below:

        3.1.1.1. The ability of the canine to discriminate scents and follow the   odor trail belonging to the matching human target.

        3.1.1.2. The ability of the canine to demonstrate the absence of a matching odor trail.

        3.1.1.3. The canine's response.

        3.1.1.4. The handler's interpretation of the canine's response.

    3.1.2. An odor recognition assessment shall consist of four individual assessments.

        3.1.2.1. For each odor recognition assessment, one human target and   two human distracters are utilized to lay human odor trails in   an environment similar to where the canine usually works (e.g.,   urban, suburban and or rural environments).

        3.1.2.2. Each odor recognition assessment shall be between 91.4 m - 182.8 m (100 - 200 yds) in length with a single split turn$_1$ involving one human target and two human distracters.

        3.1.2.3. The target trail and one human distracter trail shall be aged a   minimum of 1 hour, and one distracter trail shall be aged a   maximum of 30 minutes.

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3.1.2.4. Prior to the test, the start of the odor trail shall be marked by the assessing agency.

3.1.3. The handler shall be directed to the start marker, but not given the target's direction of travel.

3.1.4. The handler shall be provided an odor sample from the human target or a non-matching human odor sample as a negative control.[1]

3.1.3. The handler shall specify the type of odor sample (object or scent pad) his or her canine used in training sessions prior to the assessment.

3.1.5. At least half, but not all of the odor recognition assessments shall be conducted with non-matching odors to demonstrate the absence of a matching odor trail.

3.1.6. The assessor shall know the correct outcome of each assessment.

3.1.7. The handler shall not know the correct outcome of any assessment.

3.1.8. A successful completion of the odor recognition assessment is the ability to find the correct direction of travel and follow the odor trail beyond the
turn or to correctly demonstrate the absence of a matching odor trail.

3.1.9. The assessor may take into consideration environmental influences on odor in determining whether or not the canine handler team has successfully completed the odor recognition assessment.

3.1.10. The canine/handler team shall properly scent discriminate matching odor in at least 75 % of the assessments.

3.2. Comprehensive Assessment components follow:

3.2.1. This assessment tests the following canine/handler team skills:

3.2.1.1. The ability of the canine/handler team to follow a specific person's odor trail along surface types appropriate to the canine/handler team's operational requirements and to identify a specific person or location at the conclusion of the assessment.

3.2.1.2. The handler's interpretation of the canine's behavior.

3.2.1.3. The canine's response.

3.2.1.4. The handler's interpretation of the canine's response.

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[1] Diagram single split turn: S is starting point human target, F is finishing point or

OR

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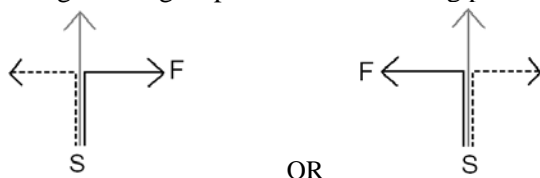
3.2.2.   One or more different potential target trails shall be approximately 1.61 km (1 mile) in length in an environment similar to where the canine usually works.

3.2.3.   Each target trail shall be aged in accordance with mission requirements.

3.2.4.   Each target trail shall contain a minimum of ten turns.

3.2.5.   Multiple human distracters, either placed or regularly occurring in the
assessment area shall be present along the distance of the target
trail.

3.2.6.   The assessment location shall be unfamiliar to the handler.

3.2.7.   The targets and distracters shall not be ones normally utilized in the training of the canine/handler team.

3.2.8.   The handler shall be informed of the start location.

3.2.9.   The handler shall be provided an odor sample from the target.

3.2.10. The handler shall specify the type of odor sample (object or scent pad) prior to the assessment.

3.2.11. The assessment should be completed in less than 60 minutes.

3.2.12. The assessor shall know the correct layout of each assessment.

3.2.13. The handler shall not know the correct layout of each assessment.

3.2.14. The handler shall articulate the canine's final response prior to the start   of the assessment

3.2.15. The canine shall demonstrate the final response which must be communicated by the handler to the assessor.

3.2.16. A successful conclusion of the assessment shall be defined by the certifying agency.

3.2.17. The canine/handler team shall be required to successfully complete the   assessment.

3.2.18. The assessor may take into consideration environmental influences on the odor in determining whether or not a canine/handler team is still on   trail.

3.2.19. Any team that is determined by the assessor to be more than 45.72 m (50   yd) off the target's trail shall be failed.

3.2.20. Identifying a human distracter will be considered a failure.

3.3. Double-Blind Assessment

3.3.1.   The double-blind assessment may only be used to fulfill a handler's operational certification if it meets or exceeds the standards in the comprehensive assessment.

3.3.2.   Any double-blind assessment may be used for proficiency testing.

3.3.3.   This assessment demonstrates the proficiency of the canine/handler team   in an operational setting.

3.3.4.   The handler will be advised of the start location.

3.3.5.   The handler shall not know the location of the end point, nor the number

of turns to be conducted.

3.3.6. The canine/handler team shall be required to successfully complete the assessment as defined by the certifying agency.

3.3.7. The handler shall articulate the canine's final response prior to the start of the assessment.

3.3.8. Identifying a human distracter will be considered a failure.

3.3.9. Neither the handler, assessor, nor any individual present with the canine handler team shall know the correct outcome of any portion assessment.

3.3.10. The assessment may or may not be timed.

3.3.11. The assessor, if present, shall observe the canine/handler team. At the conclusion of the assessment, the assessor shall compare the search results with the parameters of the search. This comparison may be done immediately after the handler determines the canine has made its trained response, or at the conclusion of the entire assessment.

SWGDOG SC 9 - HUMAN SCENT DOGS
Location Checks
Posted for Public Comment 1/3/07 – 3/3/07. Approved by the membership 3/12/07.

5. **Location Checks -** Location checks are used to identify the presence or absence of the odor of a specific person to the exclusion of all other odors at a given location. In this discipline, the canine is used to odor match a "pre-scented" object or pad to the odors present at the check site. This technique may be used for subject exclusion or inclusion odor checks.

   5.1 **Goal -** The canine shall indicate the presence or absence of the odor of a specific person at a given location.

   5.2. **Odor recognition assessment -** OBJECTIVE: This assessment tests the following:
   - The ability of the canine to scent discriminate and follow the odor trail matching the human target.
   - The canine's response.
   - The handler's interpretation of the canine's response.
   - The canine handler team shall be tested on at least 4 locations with a separate human target and separate human distracters for each location.

   5.2.1 For each location check, one human target and one or more human distracters are utilized to lay human odor tracks/trails in an environment similar to where the canine usually works (e.g., urban/suburban/rural).

   5.2.2 The handler shall be informed of the start location and not given the direction of travel taken by the target.

   5.2.3 The handler shall be provided an odor sample from the human target.

   5.2.4 Prior to the assessment, the handler shall specify the type of odor sample (object, scent pad) used to train his canine.

   5.2.5 The assessor shall know the correct outcome of each scent check.

   5.2.6 The handler shall not know the correct outcome of each scent check.

   5.2.7 A successful completion of a location check is the ability to find the correct direction of travel and follow the odor trail beyond the turn.

   5.2.8 The assessor may take into consideration environmental influences on odor in determining whether or not the canine handler team has successfully completed the location check.

   5.2.9 The canine handler team shall properly scent discriminate matching odor in at least 75% of the locations checked.

   5.3 **Comprehensive Assessment -** OBJECTIVE: This assessment tests the following:

- The ability of the canine to indicate the presence or absence of the target human odor.
- The handler's interpretation of canine behavior.
- The canine's response.
- The handler's interpretation of the canine's response.

5.3.1 At least 6 location checks, with the odor of 6 different human targets, in at least 3 different areas, with different human distracters shall be performed in this assessment.

5.3.2 Each location check shall be conducted in an environment similar to the one where the canine usually works.

5.3.3 At least half of the location checks shall be negative location checks.

5.3.4 A negative location check shall have no matching odor trail.

5.3.5 A positive location check shall have a matching odor trail aged approximately 24 (20-28) hours with no human target at the end.

5.3.6 The trail shall be a minimum of 50 yards in length.

5.3.7 The handler shall be informed of the start location and not given the direction of the target's travel.

5.3.8 The handler shall be provided with a different odor sample from a matching target or a non-matching target at each location check.

5.3.9 The handler shall specify the type of odor sample (object, scent pad) prior to the assessment.

5.3.10 Each location check shall be completed in less than 5 minutes.

5.3.11 The assessor shall know the correct outcome of each location check.

5.3.12 The handler shall not know the correct outcome of each location check, nor the number of checks to be conducted.

5.3.13 The canine shall be required to correctly indicate the presence or absence of the matching odor at each start location.

5.3.14 The handler must be able to discern canine's final response and communicate this to the assessor.

5.3.15 At least 80% of the location checks shall be performed correctly.

5.4 **Double-Blind Assessment -** OBJECTIVE: This assessment demonstrates the proficiency of the canine handler team in an operational setting.

5.4.1 One or more targets may be utilized to lay odor trails in the search area.

5.4.2 The search area, trail age and odor sample shall be appropriate to operational requirements.

5.4.3 The assessment will include negative scent match check locations.

5.4.4 Neither the canine handler, nor the assessor, nor any individual present with the canine handler team shall know the correct outcome of any portion of the assessment, including whether there is a scent match.

5.4.5 The assessment may or may not be timed.

5.4.6 The assessor shall observe the canine handler team and compare the search results with the parameters of the search at the conclusion of the assessment. This may be done immediately after the handler

concludes his canine has made its trained response, or after the conclusion of the whole assessment.

Appendix 15 – Article Search

SWGDOG SC 9 - HUMAN SCENT DOGS
Article Search
Posted for Public Comment 1/3/07 – 3/3/07. Approved by the membership
3/12/07.

8. **Article search -** This canine discipline is used for searching areas, usually near
   crime scenes, for human-scented articles that were thrown away or left behind.
   8.1 Goal - Canine shall search an area and indicate all human-scented articles
   in that area.
   8.2 Odor recognition assessment
   OBJECTIVE: This assessment tests the following:
   - The ability of the canine to indicate human-scented articles.
   - The handler's interpretation of the canine's behavior.
   - The canine's response.
   - The handler's interpretation of the canine's response.
   8.2.1 One to three individuals shall be utilized to place human scent on
   articles and throw them into a search area where the canine usually
   works (e.g., urban/suburban/rural).
   8.2.2 The articles shall be held in a closed hand(s) for a minimum of 30
   seconds prior to being thrown.
   8.2.3 A minimum of 4 scent articles shall be thrown into an area of at least
   1600 square feet (150 m^2).
   8.2.4 Neither the handler nor dog shall observe the placement of the human
   scented articles.
   8.2.5 Neither the scent contributor nor the handler shall enter the search
   area at any time.
   8.2.6 The set time shall be appropriate to the time the article was in human
   contact and shall be determined by the testing agency.
   8.2.7 The search time shall be appropriate to the search area and the
   number of articles and should impose pressure on the search team.
   8.2.8 The articles shall not be visible to either the dog or the handler either
   before or during the placement of the human-scented articles.
   8.2.9 The handler shall be informed of the search area parameters.
   8.2.10 The handler shall inform the assessor of the canine's trained
   response (active or passive) prior to the test.
   8.2.11 The assessor shall know the correct outcome of the search.
   8.2.12 The handler shall know the number of articles placed in the search
   area.
   8.2.13 The canine must be able to locate at least 75% of the articles either
   through a trained active or passive response that the handler must
   discern and communicate to the assessor prior to the assessment.

8.2.14 Responding to articles that were not introduced into the search area for assessment purposes will not be considered a failure. Such responses are not considered correct positive responses, but are also not considered false positives since it is currently impossible to determine the absence of human scent on such an article.

8.3 Comprehensive Assessment

OBJECTIVE: This assessment tests the following:
- The ability of the canine to indicate human-scented articles.
- The handler's interpretation of the canine's behavior.
- The canine's response.
- The handler's interpretation of the canine's response.
- The handler's ability to conclude the search (nothing left to find).

NOTE: A comprehensive article search assessment as conducted below incorporates odor recognition to such an extent that a separate odor recognition test is not necessary.

8.3.1 One to three individuals shall be utilized to place human-scented articles within a search area where the canine team typically works (e.g., urban/suburban/rural).

8.3.2 The articles shall be held in a closed hand(s) for a minimum of 30 seconds prior to being thrown.

8.3.3 A minimum of 4 and maximum of 6 human-scented articles will be thrown into an area of at least 1600 square feet ($150m^2$).

8.3.4 Neither the handler nor dog shall observe the placement of the human scented articles.

8.3.5 Neither the scent contributor nor handler shall enter the search area at any time.

8.3.6 The set time shall be appropriate to the time the article was in human contact and shall be determined by the testing agency.

8.3.7 The search time shall be appropriate to the search area and the number of articles and should impose pressure on the search team.

8.3.8 The articles shall not be visible to either the dog or the handler either before or during the placement of the human-scented articles.

8.3.9 The handler shall be informed of the search area parameters.

8.3.10 The handler shall inform the assessor of the canine's trained response (active or passive) prior to the test.

8.3.11 The assessor shall know the correct outcome of the search.

8.3.12 The handler shall not know the number of human-scented articles in the search.

8.3.13 The canine must be able to locate at least 75% of the human-scented articles through a trained active or passive response that the handler must discern and communicate to the assessor prior to the assessment.

8.3.14 Responding to articles that were not introduced into the search area for assessment purposes will not be considered a failure. Such responses are not considered correct positive responses, but are also

not considered false positives since it is currently impossible to determine the absence of human scent on such an article.

8.4 Double-Blind Assessment -

OBJECTIVE: This assessment demonstrates the proficiency of the canine handler team in an operational setting.

8.4.1 The search area shall be prepared in the type of environment in which the canine handler team usually works.

8.4.2 The size of the search area shall depend on operational requirements.

8.4.3 Neither the handler nor dog shall observe the placement of the human scented articles.

8.4.4 The area shall be prepared to represent an operational setting. Human-scented articles shall not be visible to the dog, the handler, or the assessor.

8.4.5 The set time and search time shall be determined by the size of the area to be searched and operational requirements.

8.4.6 The handler and the assessor shall be informed of the search location, but shall not be given further information.

8.4.7 Neither the canine handler, nor the assessor, nor any individual present shall know the correct outcome of any portion of assessment.

8.4.8 The handler shall inform the assessor of the canine's trained response prior to the test.

8.4.9 The assessor shall observe the canine handler team and compare the search results with the parameters of the search at the conclusion of the assessment. This may be done immediately after the handler concludes his canine has completed its trained response, or after the conclusion of the whole assessment.